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APPLETON'S RAILWAY SERIES

EDITED BY

EMORY R. JOHNSON, PH.D., SC.D.

PRINCIPLES OF RAILROAD TRANSPORTATION

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By EMORY R. JOHNSON, Ph.D., Sc.D., and THURMAN W. VAN METRE, A.M., Ph.D.

PRINCIPLES OF OCEAN TRANSPORTATION
By EMORY R. JOHNSON, Ph.D., Sc.D., and GROVER G. HUEBNER, Ph.D.

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RAILROAD TRAFFIC AND RATES
Vol. I.—The Freight Service.
Vol. II.—Passenger, Express and Mail Service
By EMORY R. JOHNSON, Ph.D., Sc.D., and GROVER G. HUEBNER, Ph.D.

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REGULATION OF RAILROADS and PUBLIC UTILITIES IN WISCONSIN
By FRED L. HOLMES

D. APPLETON & COMPANY, NEW YORK

PRINCIPLES OF RAILROAD TRANSPORTATION

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CONTENTS

CHAPTER PAGE

I.—INTRODUCTION—DEFINITION AND SCOPE OF TRANSPORTATION 1-9

Transportation defined, 2. The technics of transportation, 2. The service, 2. The economics of transportation, 3. Transportation economics and the science of political economy, 3. Transportation and the production of wealth, 4. Transportation and the use or consumption of wealth, 4. Relation of transportation to the exchange of wealth or commerce, 4. Relation of transportation to the distribution of wealth, 5. Transportation and political science, 7. The scope of this volume, 9.

PART I

THE AMERICAN RAILROAD SYSTEM

II.—ORIGIN OF THE AMERICAN RAILROAD . . . 13-24

Antecedents of the railroad, 14. Country roads and turnpikes, 14. Canals and improved rivers, 16. Early history of the railroad in America, 20. References, 24.

III.—GROWTH OF THE AMERICAN RAILROAD NET . . 25-37

Growth in mileage by decades, 26. Importance of the decade from 1850-1860, 26. Railroad consolidations, 28. The decade 1860-1870, 30. The first transcontinental lines, 30. The panic of 1873, 31. Construction from 1880-1890, 31. Construction since 1890, 32. Comparison of American and European railroad mileage, 33. Magnitude of the railroad system in the United States, 33. References, 37.

CHAPTER PAGE

IV.—The Mechanism of the Railroad—Development of Track and Locomotive 38-60

Early track construction, 39. Development of the railroad rail, 39. Ties and ballast, 44. Early locomotives, 45. Later types of locomotives, 51. Classification of locomotives, 57. Recent improvements in locomotives, 58.

V.—The Mechanism of the Railroad (*Concluded*)—The Car, Terminal and Operation . . . 61-83

Early passenger cars, 62. Sleeping cars, 63. Steel passenger cars, 63. The air brake, 65. Freight cars, 66. Terminal facilities, 68. The passenger terminal, 69. The freight terminal, 72. Electric telegraph, 76. Railroad signaling, 77. Electrification of steam railroads, 78. References, 82.

VI.—The Present Railroad System of the United States 84-96

Railroad mileage and number of corporations in 1914, 84. The three large territorial groups of railroads, 85. Territorial grouping into seven sections, 85. Grouping by ownership and control, 88. Supply of railroad facilities in the United States and foreign countries, 94. References, 96.

VII.—The Railroad Corporation and Its Charter . 97-107

The corporation defined, 97. The corporation and partnership distinguished, 98. The railroad company is a quasi-public private corporation, 99. The power of government to regulate railroads, 100. Railroad charters, 102. Size of railway corporations, 104. Insolvent corporations, 106. References, 107.

VIII.—Railroad Capital 108-130

Stocks and bonds, 108. Classes of bonds, 109. Classes of stocks, 110. Railroad capitalization in the United States, 110. Stock watering, 113. Motives for stock

CHAPTER PAGE

watering, 113. The promoter and the underwriter, 116. Methods of stock watering, 117. Effect of stock watering, 120. Bases of railway capitalization, 121. Public regulation of railroad capitalization, 124. State laws, 125. The Hadley Commission, 127. Federal regulation, 128. References, 130.

IX.—Earnings, Expenses and Dividends . . . 131-143

Sources of revenue, 131. Operating revenues, 131. Non-operating income, 133. Operating expenses, 134. Fixed charges, and other expenditures, 135. Net income and dividends, 135. The operating ratio, 138. Relation of earnings and dividends to business conditions, 141. References, 143.

PART II

THE RAILROAD SERVICE

X.—The Freight Service—Classification of Freight 147-159

The freight business the most important railroad service, 147. Volume of freight traffic in the United States, 148. Classification of freight, 149. The three great classifications, 150. Commodity tariffs, 155. Uniform classification, 156. How an agent ascertains rates on class and commodity freight, 158. Through and local freight, 159.

XI.—The Freight Service (*Concluded*)—Business Organization 160-180

Freight shipping papers: (1) bills of lading, (2) the waybill, 160. Unit billing, 168. Organization of freight service, 168. Demurrage, 170. Reciprocal demurrage, 171. Fast freight lines, 171. Coöperative freight lines, 173. Car interchange and the per diem system, 175. Records of car movements, 175. The railroad clearing house, 176. Private cars and private car lines, 177. References, 179.

CHAPTER PAGE

XII.—The Passenger Service 181-200

General characteristics of the passenger service, 181. Comparison of the trend of passenger fares and freight rates in the United States, 182. Volume of passenger traffic in the United States, 185. Comparison of railroad travel in the United States and foreign countries, 186. Classification of passenger travel in Europe, 187. Varieties of passenger service in the United States, 188. Relation between the Pullman Company and the railroad corporation, 193. Passenger tickets and baggage checks, 195. Methods employed to increase traffic, 196. Opportunities for developing passenger traffic, 197. Electricity and the passenger service, 199. References, 200.

XIII.—The Express Service of the Railroads . 201-217

General character of the express service, 201. The origin of the express service and its subsequent development, 203. The organization of the American Railway Express Company, 206. Express shipping papers, 207. The contractual relations between the American Railway Express Company and the railroads, 207. Express rates, 209. Volume of express business, 213. The parcel post and the express service, 214. Should the present express service be discontinued? 215. References, 216.

XIV.—The Mail Service of the Railroads . . 218-234

The mail service increases with the progress of civilization, 218. Classification of mail matter, 219. The parcel post rate system, 220. General statistics of mail traffic, 223. Mail transportation, 223. The railway post office, 225. The services performed by railroad companies in transporting the mails, 226. Railway mail pay, 227. The postal deficit and its cause, 232. References, 234.

CHAPTER PAGE

XV.—THE ORGANIZATION OF THE SERVICE . . 235-249

The corporate organization of a railroad company, 235. The secretary's department and law department, 236. The treasurer's department, 237. The accounting department, 237. The operating department and its subdivisions, 238. The traffic department, 241. Other departments, 241. Organization of the Pennsylvania Railroad Company and the Illinois Central Railroad Company, 242. References, 249.

XVI.—THE ACCOUNTS AND STATISTICS OF THE RAILROAD SERVICE 250-269

The usefulness of railroad accounts, 250. The materials of railroad accounts and statistics, 251. The comptroller's reports, 252. Annual report of the president, 252. The income statement, 253. The profit and loss account, 256. The general balance sheet, 257. The need for accuracy and uniformity in railroad accounts, 258. Government regulation of railroad accounting, 259. Five leading sources of railroad statistics, 262. Suggested extensions of the scope of transportation statistics, 265. References, 268.

PART III

THE RAILROADS AND THE PUBLIC

XVII.—INTERRAILWAY RELATIONS—RAILROAD COMPETITION AND AGREEMENTS TO MAINTAIN RATES 273-287

The public nature and the unity of the transportation service, 273. Railroad companies are coöperators and competitors, 274. Early interrailway relations, 275. Early arrangements for through traffic, 276. Interrailway rivalry; its beginnings, 277. The struggle for the Chicago-Atlantic traffic, 278. The rivalry of the Atlantic ports, 279. Early competition in the West and

CHAPTER PAGE

South, 280. Nature of railroad competition, 281. The railroad business one of "increasing returns," 283. The restraint of interrailway competition a necessity, 284. Coöperation or consolidation is the alternative, 284. Agreements to maintain rates, 284. The Saratoga Conference, 286.

XVIII.—Interrailway Relations (*Continued*)—Pools and Traffic Associations . . . 288-303

Definition of pooling, 288. Description of traffic and money pools, 288. The beginning of railroad pooling, 290. Pooling in the West, 291. The traffic association and the pool distinguished, 292. Pools in the South, 292. Early agreements in trunk line territory, 294. The trunk line pool and the Joint Executive Committee, 296. The situation as regards railroad pooling in 1887, 298. Pooling prohibited by the Interstate Commerce Act, 299. Pooling contracts were illegal at common law, 300. Reorganization of pooling contracts to eliminate the pooling feature, 301.

XIX.—Interrailway Relations (*Concluded*)—The Present Situation 304-320

Efforts of trunk lines to regulate competition after the prohibition of pooling, 304. Traffic associations decided to be a violation of antitrust law of 1890, 306. Effect of the decision in the traffic association cases, 307. Progress of railroad consolidation, 307. Methods of consolidation, 308. "Community of interest," 309. Traffic associations and informal agreements, 311. Pools legalized, 314. Classes of traffic associations, 315. Shippers' organizations, 318. References, 319.

XX.—Monopoly and Competition in the Railroad Service 321-333

Railroad corporations must be large and must coöperate, 321. Scope of railroad monopoly must be under-

CHAPTER PAGE

stood in considering charges and government regulation, 323. What is meant by monopoly, 323. The oil business an example of monopoly, 324. The railroad business has not been a complete monopoly, 325. Railroad coöperation is of two kinds; the attitude of the law toward each kind, 326. Railroad competition is of two kinds, 327. Railroad competition is not confined to junction points, 328. The competition of markets, 328. Influence of competition upon local rates, 330. The monopoly of the railroad is only partial, 332. Government regulation of a partial monopoly may be necessary, 332. The term natural monopoly not strictly accurate, 333. References, 333.

XXI.—Theory of Rates and Facts . . . 334-348

Need of a theoretical basis of rates and fares, 334. Meanings of the term "cost," 335. The impossibility of determining exactly the cost of a particular service, 336. Cost an undesirable as well as an impracticable basis of railway charges, 337. The value of the service theory of charges, 340. The value of commodity theory, or the taxation principle, of charges, 342. Charging "what the traffic will bear," 343. What constitutes a theoretically just rate? 344. Discriminations may be just or unjust, 346. The socialization of rates and fares, 347. References, 348.

XXII.—Rate Making in Practice . . . 349-364

The problem of rate making different for private and state railroads, 349. Classification the first step in making freight rates, 350. The machinery for making freight rates, 352. Considerations which influence the decisions of traffic officials, 354. Railroad coöperation in rate making, 355. Rate systems in the United States, 356. The trunk line rate system, 356. The southern rate system, 357. The western rate system, 358.

CHAPTER PAGE

Transcontinental rates, 359. Import and export rates, 360. The machinery for making passenger fares, 360. The problem of fixing passenger fares as compared with the freight rate problem, 361. The general tariff policy of American and foreign railroads, 363. References, 364.

PART IV

THE RAILROADS AND THE STATE

XXIII.—Railroads and the State. Regulation in the United Kingdom and Germany . 367-406

The twofold relation of the government to the railroads, 367. The form which the state's relation to railroads may assume, 370. Railroads of the United Kingdom received no state aid, 371. Early competition and consolidation in Great Britain, 372. Railroad coöperation, 373. British regulation of railroad consolidation, 374. Early regulation of railroad rates in Great Britain, 375. The Act of 1854, 378. The Act of 1873, 379. The Railway and Canal Traffic Act of 1888, 381. Maximum rate laws, 383. The Act of 1894, 384. British railroads and the war, 385. The Ministry of Transport Act of 1919, 387. The Railways Act of 1921, 389. Early railway policy in Germany, 390. The nationalization of Prussian railways, 394. The Prussian railway organization, 395. The results of railway nationalization in Prussia, 398. German railways and the war, 400. The present railway policy of Germany, 400. Railway policies of other countries, 402. Conditions which determine the railway policy of a state, 404. References, 405.

CHAPTER PAGE

XXIV.—PUBLIC AID TO RAILROAD CONSTRUCTION IN THE UNITED STATES 407-421

Aid given by the States to railroads, 408. Forms of aid given by the States, 409. Amount of aid given by the States, 409. The results of state aid were unsatisfactory, 410. National aid to railway construction, 411. Terms of the land grants, 412. The grants to the Pacific roads, 412. Repeal of the land grants, 415. The loan of public funds to aid railroads, 415. Concerning the policy of loans and land grants, 417. County, municipal, and individual aid to railroad building, 418. Local individual aid, 419. References, 420.

XXV.—REGULATION OF RAILROADS BY THE AMERICAN STATE GOVERNMENTS—THE STATE COMMISSIONS 422-447

Powers of the Federal and State governments over railroads, 422. Little regulation before 1870, 423. Charter limitations on rates and profits, 424. Early railroad commissions and their functions, 426. The demand for rate regulation, 427. The two types of railroad commissions, 427. The Massachusetts commission of 1869, 427. Railroad regulation in the West and South, 429. The granger laws and the Illinois commission, 430. Granger laws upheld by the Supreme Court, 432. The Wabash decision of 1886, 433. Modification of the early granger laws, 434. Recent methods of state regulation; the utilities commission, 435. The powers of present state commissions; the law of Illinois, 436. Railroad commissions and corporation commissions, 439. Objections to state regulation, 440. Changes effected by the Transportation Act of 1920, 443. References, 445.

CHAPTER PAGE

XXVI.—Railroad Regulation by the Federal Government—The Act of 1887 . . . 448-466

Origin of the demand for Federal regulation, 448. The Windom report of 1874, 449. The Cullom report of 1886, 450. Early attempts at Federal regulation, 450. The enactment of the Interstate Commerce Act of 1887, 451. Chief provisions of the law, 451. The operation of the law; the commission's orders not binding, 456. Power of the commission to secure testimony, 458. The power of the commission to regulate rates, 459. The long and short haul clause, 460. Import rates, 463. Results accomplished by the law of 1887, 464. Needed changes, 464. References, 466.

XXVII.—Federal Legislation from 1903 to 1914 467-488

The Elkins Act of 1903, 467. The Expediting Act of 1903, 468. Enactment of the Hepburn amendment of 1906, 469. Main provisions of the Hepburn amendment, 469. The question of judicial review, 474. The grounds upon which the courts set aside orders of the commission, 475. The Mann-Elkins Act of 1910, 477. Other amendments to the Interstate Commerce Act, 1910-1915, 480. The Federal Antitrust law applicable to railroads, 483. Federal regulation of railroad operation, 484. General character of the system of Federal regulation as it existed in 1910, 486. The need for modification, 487. References, 487.

XXVIII.—New Railroad Problems; Government Operation 489-511

Decline of earnings, 489. Railroad bankruptcies, 492. The Adamson Act, 494. Effects of the war, 496.

CHAPTER PAGE

Government control, 504. The Railroad Administration, 505. Operating results, 509. Financial results, 510. References, 511.

XXIX.—The Transportation Act of 1920 . 512-533

Reconstruction plans, 512. The Cummins and the Esch bills, 514. The Transportation Act, 515. Labor disturbances, 523. Rate increases, 524. The business depression, 525. Operation of the law, 528. References, 533.

XXX.—The Courts and Railroad Regulation . 534-562

Laws are partly court made, 534. Function of the judiciary in railroad regulation, 536. Development of judicial review, 536. State rate regulation, 537. The relation of the courts to unreasonable rates made by railroad companies, 541. Injunctions to prevent rate advances, 543. Injunctions to prevent rate wars, 544. Injunctions against secret rebates, 547. Injunctions and labor disputes, 548. The general law regarding strikes, 548. Injunctions to protect property and personal rights, 549. Injunctions compelling railroad employees to work, 550. Use of the injunction in the Debs strike of 1894, 551. Regulation of the use of the injunction by the Clayton Antitrust Act, 553. Railroad receiverships, 554. Railroad insolvency in the United States, 556. Causes of railroad insolvency, 557. Objections to the present system of railroad receiverships, 559. Suggested changes, 560. References, 561.

XXXI.—The Problem of Government Ownership and Government Regulation in the United States 563-577

The twofold nature of the problem of government regulation, 563. The two methods of government control, 564. Government ownership a question of expediency, 565. The experience of one country not necessarily a safe guide of action in another, 566. Should the

CHAPTER PAGE

United States adopt a policy of government ownership? 567. Probable effect of such a policy upon the railroad service, 567. Probable effect upon rates, 569. Socialization of rates and fares possible under government ownership, 571. Effect of government ownership on politics and government, 572. The success of government regulation in the United States, 573. Need for a constructive policy, 575. References, 577.

APPENDIX—QUESTIONS AND TOPICS . . . 579-609

INDEX 611

LIST OF ILLUSTRATIONS AND MAPS

ILLUSTRATIONS

PAGE

The stagecoach, generally used for passenger travel before the introduction of the railroad 14

The Conestoga wagon, the predecessor of the freight car in the Middle Atlantic States 15

The Rocket, 1829 21

Advertisement illustrating the transportation service in 1835 34

Advertisement showing what the transportation service was in 1837 36

Track with wooden stringers, surfaced with straps of iron 38

Track of granite sills plated with straps of iron . . 39

Track of cast iron rails resting on granite blocks . . 40

Rolled iron U-rail, 1844 41

Peter Cooper's locomotive, 1830 46

The Old Ironsides, 1832 48

De Witt Clinton engine and train, 1831 48

John Bull engine and train, 1831 49

Lancaster engine and train, run on Pennsylvania State Railroad, 1834 49

First Campbell locomotive, 1836 50

American (4-4-0) type of locomotive 51

Ten-wheel (4-6-0) type of locomotive 52

Mogul (2-6-0) type of locomotive 52

Consolidation (2-8-0) type of locomotive 53

Mikado (2-8-2) type of locomotive 53

Atlantic (4-4-2) type of locomotive 54
Pacific (4-6-2) type of locomotive 55
Triplex articulated (2-8-8-8-2) locomotive . . . 56
Passenger coach, 1835. Used on Pennsylvania portage railroad over the Alleghany Mountains, Pennsylvania 61
An early passenger coach 62
All steel passenger coach 64
All steel box car 66
All steel gondola car 68
Grand Central Station, New York City 70
Bird's-eye view of the Grand Central Terminal, New York City 71
Union Station, Washington, D. C. 73
Electric locomotive 79
Gas electric motor car 81
Diagram of railroad capitalization and dividends, 1890-1918 115
Railway earnings in the United States since 1890 . . 140
Straight bill of lading 161
Order bill of lading 163
Merchandise waybill 165
Card waybill 166

MAPS

FACING PAGE
Canals and railroads in New York in 1840 . . . 12
Canals and railroads in Pennsylvania in 1840 . . . 13
Map of the United States showing railroads in 1850 . 28
Map of the railroads in the United States in 1860 . . 28
Map of the United States showing railroads in 1870 . 28
Map of the United States showing railroads in 1880 . 28
Map of the United States showing railroads in 1890 . 28
Map of the railroads in the United States in 1921 . . 28

FACING PAGE

Vanderbilt group 90
Pennsylvania group 90
Morgan group 90
Union Pacific and Southern Pacific Systems . . . 90
Hill group 90
Chicago, Milwaukee and St. Paul 90
Atchison, Topeka and Santa Fe 90
Territorial districts of the United States adopted by the Interstate Commerce Commission 90
Section of express map showing method of numbering blocks 208
Section of parcel post map for unit No. 869 . . . 218

PRINCIPLES OF RAILROAD TRANSPORTATION

CHAPTER I

INTRODUCTION—DEFINITION AND SCOPE OF TRANSPORTATION

Transportation defined, 2. The technics of transportation, 2. The service, 2. The economics of transportation, 3. Transportation economics and the science of political economy, 3. Transportation and the production of wealth, 4. Transportation and the use or consumption of wealth, 4. Relation of transportation to the exchange of wealth or commerce, 4. Relation of transportation to the distribution of wealth, 5. Transportation and political science, 7. The scope of this volume, 9.

TRANSPORTATION has to do with travel, traffic, and communication; it is concerned with the movement of persons and things, and with the transmission of ideas. The term is applied both to the instruments by which movement is accomplished and to the service performed by those agencies. The several instrumentalities—waterways, highways, railroads and the vehicles used upon them, the telegraph and telephone—are spoken of collectively as the transportation system. In the study of transportation attention may be directed either to the system or to the service.

The system is the machine that performs the service, and a study of it is a technical one, covering the engineering

problem connected with the construction, maintenance, and operation of the means or mechanism of transportation, and also including the business principles and methods prevailing in the management of the several parts of the various organizations engaged in performing the transportation service. The engineering side of the *technics* of transportation is studied in the civil and mechanical engineering schools, which give instruction in the principles and methods of building the structures and machinery pertaining to each of the several transportation agencies—instruction in improving rivers, building canals, highways, and railroads; in designing and constructing ships, engines, locomotives, and cars; and in the several branches of electrical engineering. The principles and methods of administration, or the business technics, with the exception of such as may be included in the study of accounting and telegraphy, are as yet but little taught in American schools. They must be mastered in the school of experience. In this regard the educational facilities in the United States are somewhat inferior to those in some European countries.

In studying the transportation *service*, only incidental regard need be given either to the agencies which perform the service or to the technics of the administration of those agencies. The purposes of the study are threefold: (1) To understand the nature and scope of the transportation service both as a whole and with such detail as may be necessary to an intelligent consideration of each of the several branches of the service; (2) to analyze the relations of the companies and individuals who perform the services to the users of the service—the relations, actual and desirable, of the carriers and the public; (3) to ascertain the degree and form of supervision or control that the Government should exercise over the relations of the carriers and the public.

In contrast with the technics of transportation, the study

of the service may be called the *economics* of transportation—the study which treats of the characteristics of the transportation service, the business relations of the carriers and the public, and the governmental supervision or control of transportation. This study comprises a part of each of two social sciences: economics or political economy and civics or political science.

Political economy, or economics, is the science of business affairs, or, as it is sometimes defined, the science which treats of the efforts of men to satisfy their wants. Among the manifold instrumentalities men have devised to assist them in the business activities which they carry on to create the wealth whereby their wants are satisfied, transportation agencies have come to be indispensable, and a study of the services performed by those agencies constitutes an important part of the science of business affairs. The position of transportation economics in political economy can be specifically stated by explaining briefly the relation of the transportation service to the production, consumption, exchange, and distribution of wealth.

Production consists in making matter more useful for purposes of consumption. It is the creation of utilities. To give matter the ability to satisfy wants, two things must be done: The commodities must be given the form or the qualities which the user desires them to possess, and the articles must be taken to the user. The form and intrinsic qualities that make matter useful result from agriculture, manufacture, and the various industries by which things are grown and shaped. The transportation service puts commodities in the place where they can be used. An article that has been grown, mined, or manufactured has received only a part of the services by which it becomes useful. Only the intrinsic utilities of form or quality have been created; the usefulness which depends upon the location of the article—its place utilities—has yet to be given it. Place

utilities are created by the transportation services, which are thus a part of the general process of production.

The relation of transportation to production may also be shown by considering the general effect which improvements in transportation services have had on the use or consumption of wealth. Men produce commodities, because they want the commodities, because they wish to hoard up, or use—that is, "consume"—them; accordingly, what men produce depends upon the kinds, number, and intensity of their wants. From this it follows that any force or influence that changes men's wants will also affect their productive activities. This truth is illustrated by the fact that the uncivilized man will do but little work, because he wants but a few things. The only way to make him work is to create wants in him.

The causes which modify the wants of men, and thus change what they produce and consume, are many, but nothing will do more to create new wants or more intense ones than a decrease in the cost and an increase in the quantity and variety of consumable commodities. The availability of commodities has been multiplied many times by improvements in transportation, and the effect of this upon human wants has unquestionably been great. Indeed, with our present facilities of transportation, there is practically no limit to the number of wants we can satisfy, and our rapidly increasing demands have spurred us on to an ever-widening range of production.

Commerce consists in exchange of commodities between separated localities—it is the agency by means of which the consumer and producer are brought together. The process involves a sale and purchase of goods, their transmission from the seller to the buyer, and the settlement of business accounts. Transportation is one of the mechanisms through which this is accomplished. Among the other agencies of commerce are the stock exchanges, the bourses, the markets,

the banks, the trust companies, and insurance companies; but of these several auxiliaries the transportation service is the least dispensable. With the growing subdivision and specialization in productive effort, with the continually increasing tendency to locate industries where they can be carried on most economically, with the constant extension of the areas from which the materials of industry are drawn and over which the products are marketed, commerce, and particularly that part of commerce which is concerned with the movement of persons and things, becomes of ever greater consequence in all productive enterprises. The production of wealth has been greatly enhanced by the enlargement of commerce, and the extension of commerce has been possible mainly because of the improvements that have been made in the agencies by which the various transportation services are performed.

The relation of transportation to the distribution of wealth is somewhat complex. Wealth is the creation or product of three factors: land or the resources of nature, capital, and human effort, physical and mental. Nature is the source of wealth, capital is the tool, and man is the agent by which the source is drawn upon. The income which men derive from the possession of natural agencies and resources is called rent, that secured from the ownership of capital is termed interest, that obtained from effort is named wages. The income or rent received by the owner of "land" depends upon two things: the productivity or intrinsic characteristics of the land or natural resource, and its location. The rent which owners of agricultural land can command depends upon its fertility and its location with reference to markets; rents from mines and forests are determined by productivity and location; rents on building sites result mainly from location. As far as rent depends upon location, the determining factor is transportation, and every improvement or change in the facilities or costs of

transportation services must have an influence upon the total amount of "rent" received by the owners of natural agents and must readjust the distribution of that form of income among its recipients.

The relation of the transportation service to the income from capital is twofold; the total income from capital has been greatly increased by the modern transportation facilities, but the rate of return has been lowered. Capital is so generally and extensively employed in production today, as the result of improved transportation, the use of machinery, and other well-known causes, that we have come to speak of modern productive processes as capitalistic in contrast with those of a hundred years ago, when most things were done by manual labor and when land and labor received nearly all of the income from production. But the accumulation of wealth has been so rapid as to make capital abundant and to cause the rate of interest to decline rather than rise. This fall in the rate of interest, however, has been slower than it would have been had not the opportunities for investment been greatly multiplied by the extension and improvement of the means of transportation.

By wages, the income resulting from human effort, is popularly meant the money payment received by those who toil with hand or brain; but in scientific discussion the word more frequently means the amount of useful commodities received by the workers. The "real" wages of a day's labor are the commodities which a day's labor will secure. Possibly transportation has had no more marked effect than that of increasing the quantity and variety of useful things which come within the range of the toiler's income. The luxuries of past generations have now become necessities, because of the reductions in the costs of production effected by improved transportation and other forces. Furthermore, as the laborer's real wages have increased, his efficiency has become greater and his impulses to effort have been strength-

ened. To have is to want more, to strive harder. We call this raising the standard of living, the progress of civilization.

As the result of cheap transportation, those who produce have multiplied their wants and their efforts; and with the present highly developed transportation service to aid them, their efforts are far more productive than they would otherwise be. Human effort creates enormously more wealth than was formerly possible. Whether, in the distribution of wealth among the classes who control or contribute to the forces of production, labor or human effort receives an adequate share of the total, is a question concerning which there are differences of opinion. The absolute income of labor is greater than it was when cruder processes of production prevailed, and that income continues to increase; but it is by no means certain that the forces controlling the distribution give labor an equitable share.

The relation of the government, local, State, and Federal, to transportation is such an intimate one that a study of the transportation service necessarily involves a consideration of some duties and activities of the State, subjects covered by the study of government or political science. Indeed, some branches of transportation, as the mail service, are everywhere carried on by the government. The city streets and most country roads are highways maintained at public expense; and the commercially important lakes, streams, and harbors are usually improved and maintained wholly or partially by the use of public funds. Canals are sometimes private enterprises, but more often are state works. Street railways, especially in Europe, are frequently owned by the cities, and sometimes are operated by them. In many countries the steam railroads are owned and managed by the government, and in all countries where private ownership prevails the railroad service is subject to govern-

ment regulation. The telephone service has thus far usually been conducted by private companies.

Whether performed by the government, or by companies, or by individuals, the transportation service is of a public nature. This is a well-established principle of law, the Supreme Court of the United States having held that "the business of a public carrier is of a public nature, and in performing it the carrier is also performing to a certain extent a function of government which requires him to perform the service upon equal terms to all." The principle applies as much to railroads built and operated by corporations as to other transportation agencies.

> Whether the use of a railroad is a private one depends in no measure upon the question who constructed it or who owns it. It has never been considered a matter of any importance that the road was built by the agency of a private corporation. No matter who is the agent, the function performed is that of the state. Though the ownership is private, the use is public.[1]

The general basis of this principle is the vital dependence of the social organization upon transportation. A service must be of a public nature that is essential to orderly human relations, to all industrial activities, and the progress and welfare of society. The public nature of the transportation services of railroads and some other carriers is recognized by the state in the granting of franchises giving to such carriers the power to take possession of the private property they may need. To quote the language of the United States Supreme Court,

> The State would have no power to grant the right of appropriation unless the use to which the land was to be put was a public one. Taking land for railroad purposes is a taking for

[1] *Olcott* v. *The Supervisors*, 16 Wallace 695.

a public purpose, and the fact that it is taken for a public purpose is the sole justification for taking it at all.[1]

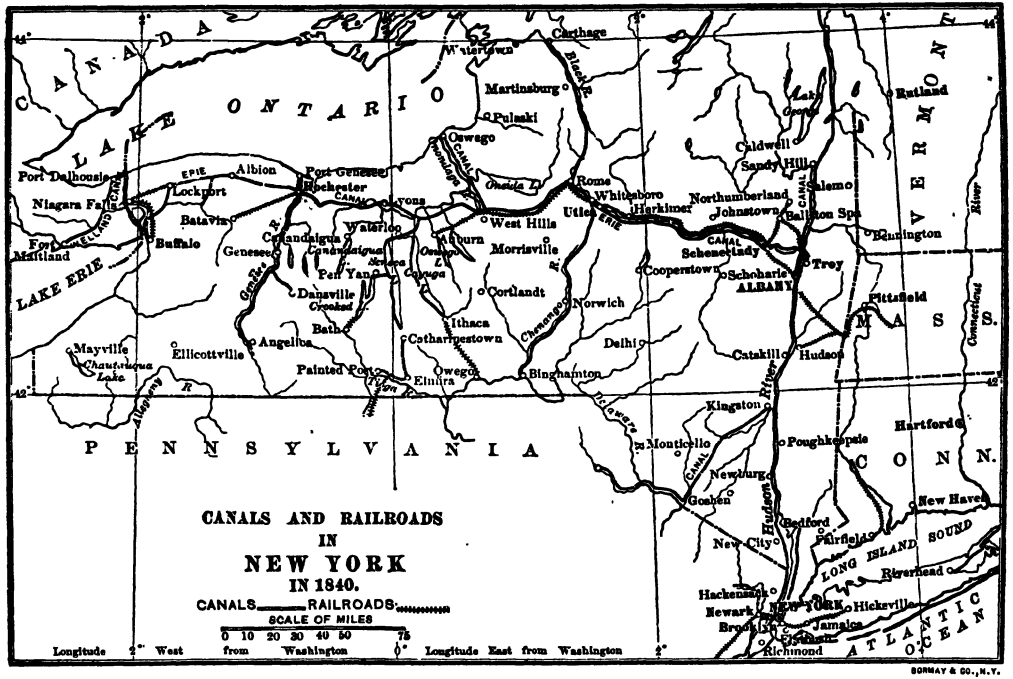
In studying the transportation service, then, we are dealing with one of the functions of government, and one of the important branches of political science. In considering this service the student is concerned with the government at work either performing the service directly or insuring its proper performance by persons and corporations receiving from the state their authority to act, and subject in their actions to the regulative control of the government. The problems of the government ownership, operation, and regulation of the agencies of transportation require the investigator to inquire into some most interesting questions regarding the functions of government and the proper scope of its activities.

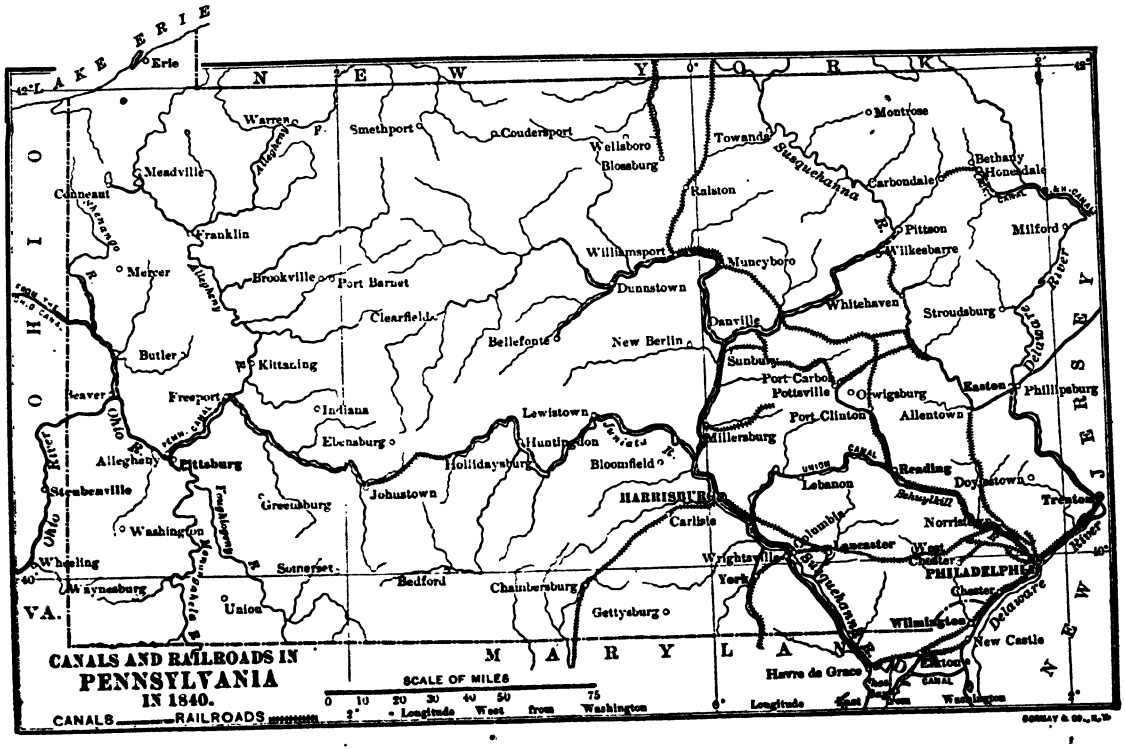
This volume is concerned with the transportation service performed by steam railroads. It does not discuss the engineering and other technical questions of railroad construction and operation, but describes the American railroad system, gives an account of the service performed by the different branches of the railroad organization, considers the business relations of the railroads and the public, and discusses the problems of government regulation. The book is a study in railway economics, and is intended to be an introduction to the general subject of railroad transportation, a volume that may profitably precede or accompany a more special study of a particular branch of the railway service.

[1] *United States* v. *Joint Traffic Association et al.*, 171 U. S., 505.

PART I

THE AMERICAN RAILROAD SYSTEM


CANADA
LAKE ONTARIO
LAKE ERIE
PENNSYLVANIA
VERMONT
MASS.
CONN.
ATLANTIC OCEAN
LONG ISLAND SOUND
Carthage
Martinsburg
Pulaski
Oswego
Rome
Whitesboro
Utica
Oneida L.
Black R.
Rutland
Lake George
Caldwell
Sandy Hill
Salemo
Northumberland
Johnstown
Ballston Spa
Saratoga
Schenectady
Troy
ALBANY
Cooperstown
Schoharie
Pittsfield
Connecticut River
Port Dalhousie
Niagara Falls
Lockport
Albion
Port Genesee
Rochester
Lyons
West Hills
Herkimer
Batavia
Buffalo
Fort Mississauga
Fort Erie
Waterloo
Canandaigua
Geneseo
Auburn
Morrisville
Penn Yan
Owasco L.
Cayuga L.
Seneca L.
Genesee R.
Cortlandt
Norwich
Danville
Crooked L.
Bath
Ithaca
Catharinestown
Chenango R.
Delhi
Angelica
Mayville
Chautauque Lake
Ellicottville
Painted Post
Elmira
Owego
Binghamton
Susquehanna R.
Allegany R.
Delaware R.
Kingston
Catskill
Hudson
Hartford
Monticello
Poughkeepsie
Newburg
Goshen
New Haven
Bedford
Fairfield
New City
Riverhead
Hackensack
Newark
Brooklyn
NEW YORK
Hicksville
Jamaica
Flushing
Richmond
Canal
Erie
Hudson River
CANALS AND RAILROADS
IN
NEW YORK
IN 1840.
CANALS
RAILROADS
SCALE OF MILES
0 10 20 30 40 50 75
Longitude 2° West from Washington 0° Longitude East from Washington 2°
BORMAY & CO., N.Y.


LAKE ERIE
Erie
NEW YORK
OHIO
Warren
Smethport
Coudersport
Wellsboro
Towanda
Montrose
Bethany
Honesdale
Meadville
Bloomsburg
Ralston
Susquehanna R.
Carbondale
Conneaut
Franklin
Pittson
Milford
Williamsport
Muncyboro
Wilkesbarre
Mercer
Brookville
Port Barnet
Dunnstown
Delaware River
Clearfield
Danville
Whitehaven
Stroudsburg
Bellefonte
New Berlin
Butler
Kittaning
Sunbury
Port Carbon
Pottsville
Orwigsburg
Easton
Phillipsburg
Beaver
Freeport
Indiana
Lewistown
Port Clinton
Allentown
Ebensburg
Huntingdon
Millersburg
Allegheny
Pittsburg
Hollidaysburg
Bloomfield
Union Canal
Reading
Lebanon
Steubenville
Greensburg
Johnstown
HARRISBURG
Doylestown
Trenton
Carlisle
Washington
Norristown
Wheeling
Somerset
Wrightsville
Lancaster
West Chester
PHILADELPHIA
Waynesburg
Bedford
Chambersburg
York
Chester
VA.
Union
Gettysburg
Wilmington
New Castle
MARYLAND
Havre de Grace
Elkton
CANALS AND RAILROADS IN PENNSYLVANIA IN 1840.
SCALE OF MILES
0 10 20 30 40 50 75
Longitude West from Washington
CANALS
RAILROADS

CHAPTER II

ORIGIN OF THE AMERICAN RAILROAD

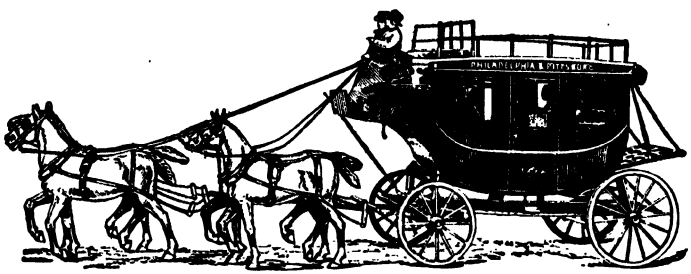
Antecedents of the railroad, 14. Country roads and turnpikes, 14. Canals and improved rivers, 16. Early history of the railroad in America, 20. References, 23.

UNTIL the fourth decade of the nineteenth century the inland highways of travel and trade were wagon roads, rivers and canals. As compared with Europe the United States was poorly equipped with these means of transportation, because the newness of the country, the sparseness of population and the undeveloped state of industry had kept both the government and individuals from devoting to the building of roads and waterways the meager volume of capital available for investment. Most of the countries of western Europe still lead the United States in the building of roads and waterways, though the railway mileage in this country now surpasses that of all Europe. In recent years, however, there has been a widespread movement in the United States toward the betterment of roads and the construction of an adequate system of inland waterways, and a vast amount of work has been accomplished, in which Federal, State and local governments as well as private individuals and corporations have shared.

Until near the end of the eighteenth century the country roads constructed in America were built and maintained by the local governments—that is, by the towns in New England, the townships in the middle Atlantic section, and the counties in the South. With the growth of population

and business these highways became so inadequate that corporations of individuals began the construction of roads and charged tolls for their use. These roads were called turnpikes, because at the places where tolls were collected there was placed across the road a gate consisting of a pole armed with pikes and so hung as to turn upon a post.

The construction of toll roads began soon after 1790, and numerous turnpike companies were chartered by each State,



THE STAGECOACH, GENERALLY USED FOR PASSENGER TRAVEL BEFORE THE INTRODUCTION OF THE RAILROAD

particularly by the Middle and New England States. The greatest mileage was built in Pennsylvania, and what was done in that State is typical of what occurred in many other parts of the country. In 1790 a company was chartered to build a turnpike from Philadelphia to Lancaster, and this road, begun in 1792, was completed in 1794. Later this road became a part of a continuous line of turnpikes extending from Trenton, N. J., to Steubenville, on the Ohio River, a distance of 343 miles. Before the construction of railroads began in this country, 102 Pennsylvania companies had built 2,380 miles of roads in that State at a cost of nearly $8,500,000. Although these toll roads did not, as a rule, prove to be very profitable to the companies which built them, they were of great benefit to the people of the State. Some of these turnpikes are still operated as toll roads, al-

though most of them have very properly become free public highways.

Some turnpike roads were built with funds donated by the State and by the Federal Government at the time when public aid was being given freely to works of "internal improvement." The most celebrated of these turnpikes was the Cumberland Road, or the "National Pike," constructed by the United States. The first appropriation for the building of this highway was made in 1806, and the first con-



THE CONESTOGA WAGON, THE PREDECESSOR OF THE FREIGHT CAR IN THE MIDDLE ATLANTIC STATES

struction contract was let in 1811. The road was built westward from Cumberland, Md., and by 1818 it reached Wheeling on the Ohio River. Subsequently it was extended across Ohio and Indiana, and by 1838 it reached Vandalia in central Illinois. It was to have gone to Jefferson City, Mo., but before Illinois had been crossed the superiority of the railroad for the carriage of long-distance traffic had been fully demonstrated, and further extension of the National Pike was discontinued.

Even before the period of turnpike construction began attempts were made to establish artificial waterways in America. Surveys of canal routes were made in Pennsylvania as early as 1762. In 1774, Washington, who years before had been deeply impressed by the need for a through transportation route between the Atlantic seaboard and the region west of the Allegheny Mountains, laid before the

Virginia House of Burgesses a plan for establishing a great highway between the East and the West by the improvement of the navigation of the Potomac River from tidewater to Fort Cumberland, and the construction of a road across the mountains to the nearest navigable tributary of the Ohio River. A bill was introduced by the terms of which individuals were permitted and authorized to subscribe the funds necessary to carry out such a scheme, but before an agreement could be reached between Virginia and Maryland concerning the improvement of the Potomac River, the Revolutionary War broke out and temporarily put a stop to all plans for the undertaking.

With the return of peace the agitation for the establishment of waterways was renewed, and a large number of notable improvements were planned. Washington displayed a deep interest in the entire movement and especially in his favorite project of constructing a through route between the Ohio Valley and the Atlantic coast region, and for a few years he was president of the Potomac Company, a corporation chartered by Virginia and Maryland for the improvement of the Potomac River. While he was in charge, the enterprise was vigorously prosecuted and a considerable portion of the work of building a canal around some of the falls in the river was completed, but when he resigned to become President of the United States in 1789, the project was allowed to languish and work was practically abandoned. Because of a lack of capital only a few of the many other waterways planned at the time were completed, the most important being the Dismal Swamp Canal, which was built between 1787 and 1794, and the Middlesex Canal, which was finished in 1804. However, with the spread of population westward from the ocean, the need for better transportation facilities became more and more pressing, and it was strongly urged that the Federal Government undertake the work of supplying them.

In 1808 Albert Gallatin, the Secretary of Treasury, made an elaborate report to Congress, outlining in detail a plan for the construction by the United States of a comprehensive system of waterways and roads to extend throughout the entire country. Before any action could be taken on Gallatin's scheme the government became involved in the complications which led finally to the second war with England. By temporarily cutting off all intercourse with Europe and by confining domestic trade almost entirely to inland routes the war strongly emphasized the need of the people of the United States for a more adequate transportation system; and, when peace was again restored, determined efforts were put forth to secure a number of important artificial waterways by the construction of canals and by the canalization of rivers. The National Government, under the control of the strict constructionist party, did not for a time assist in the work of supplying "internal improvements," but State governments and private corporations, aided by the States, undertook the work, and later the Federal Government gave extensive aid, directly and indirectly, to the projects both of States and of private corporations.

Of the many schemes for waterway improvements planned and undertaken soon after the close of the War of 1812 there were two of especial prominence, one for the purpose of connecting the anthracite coal fields in eastern Pennsylvania with tidewater, and the other for the purpose of establishing through transportation routes between the East and the West. One of the first of the anthracite tidewater canals was the Schuylkill Navigation, which was built along the Schuylkill River from Mount Carbon to Philadelphia, and opened for traffic early in 1826. Shortly afterward canals were built along the Lackawaxen, Lehigh and Susquehanna Rivers. From the Delaware River, opposite the point of entrance of the Lackawaxen Canal, the Delaware and Hudson Canal was built to Rondout, N. Y., on the

Hudson River, and two other lines of communication between the Delaware River and New York harbor were established by way of the Morris Canal extending from a point opposite Easton, Pa., to Newark and Jersey City, and by way of the Delaware and Raritan Canal from Bordentown to New Brunswick, N. J. All of these canals, with the exception of part of the one along the Susquehanna River, were built by private corporations, which in most cases, however, were subsidized by the State governments. The State of Pennsylvania also constructed, as a part of the anthracite tidewater system, a canal along the Delaware River from Easton to Bristol.

The project of establishing a through route to the West was attempted by each of three States, New York, Pennsylvania and Maryland, but only the effort of New York resulted in complete success. This State built the Erie Canal, which was begun in 1817 and opened in 1825. For nearly a half century after its completion this waterway and its connections constituted the most important single route of trade between the Central States and the Atlantic seaboard.

The immediate success of the Erie Canal roused Pennsylvania to action, and in 1826 she began her system of "public works," the main feature of which was a composite rail and water route, completed in 1834, connecting Philadelphia with Pittsburgh. A railroad ran from Philadelphia to the Susquehanna River at Columbia, thence a canal extended up the Susquehanna and Juniata Rivers to Hollidaysburg. Between Hollidaysburg and Johnstown the canal barges were carried over the mountains by a portage railroad; a canal connected Johnstown and Pittsburgh, at which point junction was made with the Ohio River steamboats. Though affording a through route between Philadelphia and Pittsburgh this line proved to be both inconvenient to operate and expensive to maintain; it was never able to compete

successfully with the Erie Canal for through traffic, and soon after the completion of the Pennsylvania Railroad most of it was abandoned.

Two years after Pennsylvania started the construction of her public works, a corporation chartered by Virginia and Maryland as a successor of the old Potomac Company of which Washington had for a time been president, began to build the Chesapeake and Ohio Canal in the valley of the Potomac. This canal was never built farther than Cumberland and it did not reach there until 1850.

In addition to the waterways already described a large number of others were constructed. By 1840 New York and Pennsylvania each had nearly 1,000 miles of artificial waterway. The transportation systems of canals and railroads in those two States in 1840 is shown by the accompanying charts giving data taken from Tanner's maps of that date. Several short canals were built along the Atlantic coast to connect some of the larger indentations of the sea. The most important of these waterways was the Chesapeake and Delaware Canal which was completed in 1829. In the Western States also, where the people were anxious to take advantage of the new route to the East afforded by the Erie Canal, great interest was taken in the construction of waterways. Between 1830 and 1850, Ohio and Indiana, aided by large grants of land from the Federal Government, built three canals joining the Ohio River to Lake Erie; and Illinois built a canal from Chicago on Lake Michigan to La Salle on the Illinois River.

After 1840 canal building fell off rapidly. The panic of 1837 so crippled the financial resources of the States that they were temporarily left without surplus funds to invest in internal improvements; at the same time the railroads were being extended rapidly and were taking the traffic that had previously moved by water. The use of rivers and canals did not stop with the spread of the railway

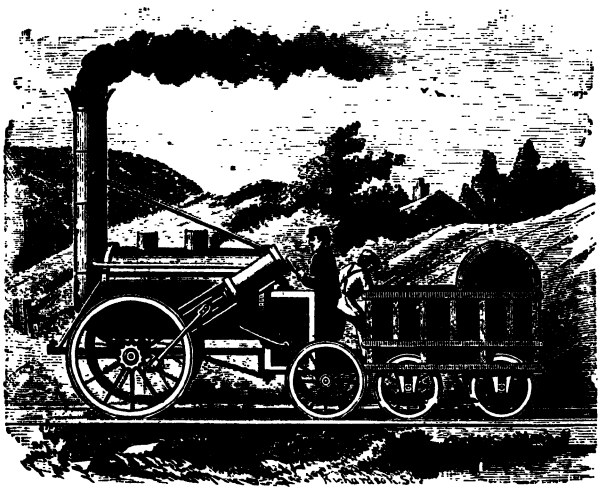
system, nor have the inland waterways yet ceased to be serviceable; but at the present time only the large lakes and rivers and the most important canals are able to hold their traffic in competition with the railroads.

The railroad at the beginning was an improved tramway equipped with a track upon which locomotives could be run. The distinctive feature of the railroad was the substitution of mechanical for animal traction (the use of steam instead of muscle as the power by which vehicles were moved), and, although the first locomotives were small and crude, their use as an agent of transportation marks one of the greatest advances the world has ever made. Mechanical traction freed society from the narrow limitations which muscular force placed upon human development, and gave man possession of an agency capable of indefinite improvement.

The construction of tramways for cars drawn by horses was a comparatively simple task, and, from 1801 on, tramway companies were frequently chartered in England. The tracks were used mainly for hauling minerals. The Quincy tramway, the first road of its kind in America—built in Massachusetts in 1826 and sometimes wrongly called the first railroad in America—was used to transport the building-stone of which Bunker Hill monument was erected. It was only three miles in length, and extended from the Quincy quarries to a wharf on the Neponset River. Near the quarry there was a steep incline, up and down which the cars were handled by a stationary engine; for the remainder of the distance horses were used.

The rails used on the tramways and on most of the early railroads of America consisted of wooden beams with a strap of iron nailed to the upper surface, the rails being very similar to those most frequently used for street railways until horse cars were displaced by the heavier electric cars run at a higher rate of speed.

The successful locomotive dates from 1829, at which time the celebrated English engineer Stephenson brought out the Rocket. The stationary engine had been introduced by Watt 50 years before that time, but it was Stephenson who first incorporated in the engine the two features essential to a workable locomotive. One of these two features was the multitubular boiler, by which the heating surface



THE ROCKET, 1829

was greatly increased. Stephenson was not the inventor of this, but was the first to make practical use of the invention. The other feature was the exhaust draft, the device whereby the exhaust steam from the cylinder created a stronger draft through the firebox and the tubes of the boiler. By combining these two principles in the Rocket, Stephenson became the "father of the locomotive." At the trial test, in October, 1829, on the Liverpool and Manchester Railroad, the Rocket attained a speed of 29 miles an hour and the practicability of mechanical traction became a demonstrated fact. The day of doubtful ex-

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periment was past, the tramway became the railroad.

The first railroad in England, the line between Liverpool and Manchester, was begun in 1826—three years before the success of the locomotive was assured. At Mauch Chunk, Pa., in 1827, and between Carbondale and Honesdale, in the same State, in 1826, two coal companies had opened roads for the transportation of their coal from the mines to their canals. These mountain roads were built for private use, and the cars were operated by the force of gravity and by means of stationary engines. They were not railroads in the present meaning of the term. The pioneer American railroad built for general public use was the Baltimore and Ohio. The company was chartered in 1827 and construction was begun in 1828, but not on a large scale, there being only 13 miles open for traffic in 1830. Five years later the length of the road was 135 miles. The first rail of this historic road was laid on July 4, 1828, by Charles Carroll, the only living signer of the Declaration of Independence. As Professor Hadley, writing in 1885, stated: "One man's life formed the connecting link between the political revolution of the last century and the industrial revolution of the present."

The construction of numerous other roads was begun shortly after work commenced on the Baltimore and Ohio. A South Carolina road, the Charleston and Hamburg, was chartered in 1829, and in 1834 it had 137 miles in operation. For a short time it was the longest line in the world under one management. The parent company of the New York Central system, the Mohawk and Hudson, was chartered as early as 1826, and began construction in 1830. The line from Albany to Schenectady, 17 miles, was opened in 1831. Five years later Albany and Utica had been connected by rail. In 1842 Buffalo was reached, and by that time lines had been built from New York and Boston to Albany, so that the East and the West of that period had

been joined by easy communication by way of the railroads and the Great Lakes.

Between 1830 and 1835 railroad building was pushed more rapidly in Pennsylvania than in any other State, 200 miles being opened. The first division of the present Pennsylvania Railroad system was the Columbia Railroad, by which Philadelphia was connected with Columbia, on the Susquehanna River, in 1834. The road was built by the State, its construction having been authorized in 1828. This railroad was a link in the through route above referred to, consisting of canals and railroads, by which the State connected Philadelphia with the Ohio River at Pittsburgh in 1834. The line to connect Philadelphia with New York, the Camden and Amboy, was chartered in 1830 and completed in 1837. The road from Philadelphia to Baltimore, the Philadelphia, Wilmington and Baltimore, was chartered in 1831 and finished in 1837. The Reading Railroad, built mainly for the transportation of coal, was chartered in 1833 and opened for traffic five years later.

In Massachusetts the chartering of railroad companies began in 1830, and in 1835 three lines radiated from Boston. One ran south to Providence, another north to Lowell, and a third west to Worcester. This third line reached Albany and western connections just at the close of 1841.

Americans began to build locomotives in 1830, or about as soon as they engaged in railroad building. The English locomotives were expensive, they could not be secured promptly, and when obtained they were not well adapted to the light rails, steep grades, and sharp curves of the American tracks. The traffic conditions caused the engines and cars to be built according to designs different from those followed in Great Britain, and the differences in equipment are quite as pronounced today as they were at the beginning.

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CHAPTER III

GROWTH OF THE AMERICAN RAILROAD NET

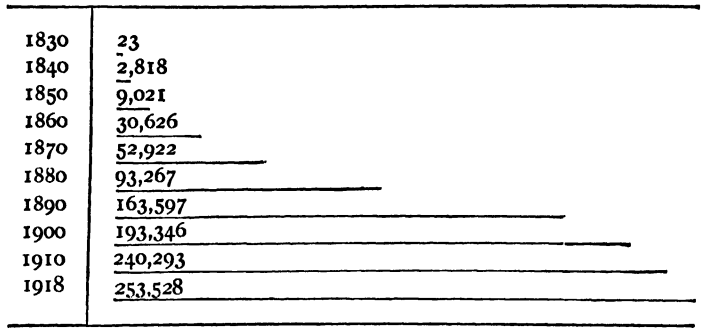
Growth in mileage by decades, 26. Importance of the decade from 1850-1860, 26. Railroad consolidations, 28. The decade, 1860-1870, 30. The first transcontinental lines, 30. The panic of 1873, 31. Construction from 1880-1890, 31. Construction since 1890, 32. Comparison of American and European railroad mileage, 33. Magnitude of the railroad system in the United States, 33. References, 37.

THE accompanying chart shows what the railway mileage of this country has been at the beginning of each decade since the introduction of the new means of transportation. In 1830 there were but 23 miles in use. During the succeeding ten years the total mileage reached 2,818. The account just given of the early history of American railroads shows that the roads constructed during the first ten years radiated from several Atlantic seaports, Philadelphia being the most important center in 1840.[1] New York was a larger city, but having especially favorable facilities for water transportation, its railway connections were developed somewhat more slowly than were those of Philadelphia.

In the year 1850 the length of the railways in the United States reached 9,021 miles. The growth during the preceding ten years had not been especially rapid outside of the New England States. The decade 1840 to 1850 was not a period of rapid industrial development. The progress of the country was steady, but comparatively slow. Railroad

[1] Consult map of Pennsylvania's railroad net in 1840.

Chart showing by decades the mileage of railway lines in the United States



building in the Southern States made little headway, and in the central West only three important lines were begun. In New England, where the country was most thickly populated, the progress was greater, so that by 1850 nearly all the present important trunk lines in that section had been completed.

The ten years following 1850 were far more important in railroad history than were the ten years previous. The increase between 1850 and 1860 was from 9,021 to 30,626 miles. Several causes combined to bring about this rapid expansion. Fully recovered from the financial and industrial depression occasioned by the disastrous panic of 1837, the United States was enjoying a period of great business prosperity. In the central West the steady inflow of settlers had brought about the addition of thousands of acres to the farm land of the nation, and with the great increase in acreage and the constantly growing use of farm machinery, the annual product of agriculture in this section, composed chiefly of cereals, was enormously augmented; in the South cotton cultivation had become the one dominating industry and with the multiplication of spindles and looms in New England and abroad the cotton plantations grew in number and extent and the crop of cotton became

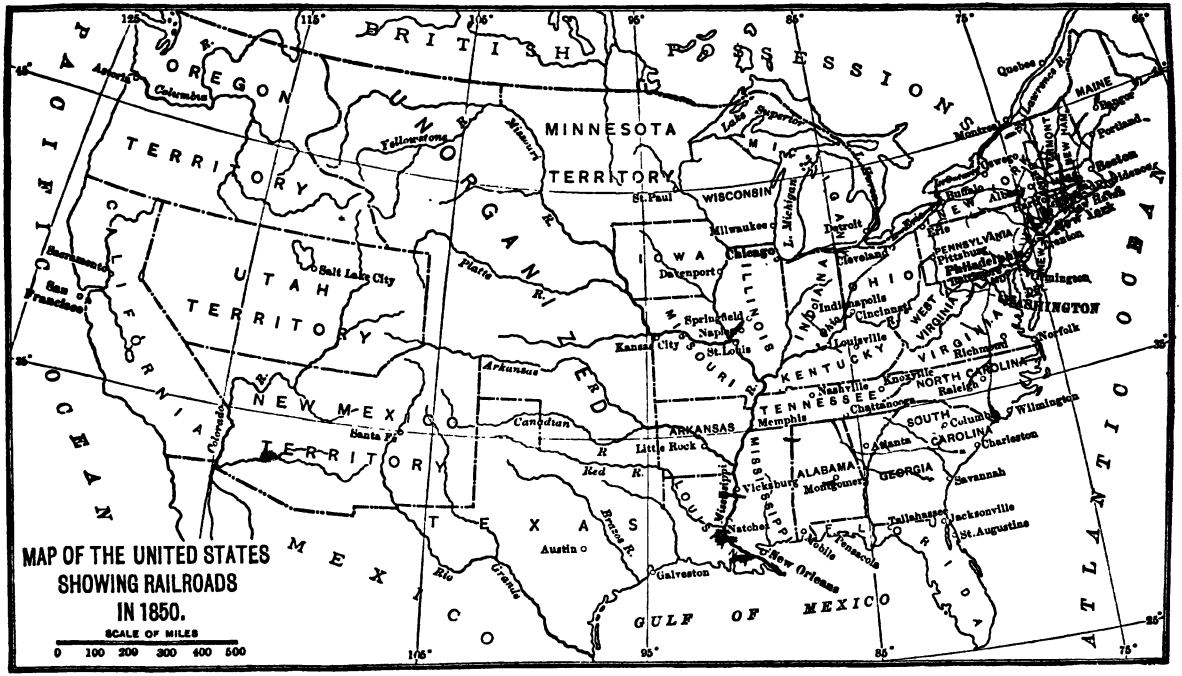
larger each year; in New England and the middle Atlantic States manufactures and commerce were assuming the position of leading importance. To care for the expanding volume of traffic entering into domestic trade and to insure the permanent prosperity of the three economic sections of the country an adequate transportation system was vitally necessary. The railroad had fully demonstrated its superiority over the canal for the speedy carriage of all kinds of traffic; moreover, railroads could be constructed more cheaply than canals and could also overcome the difficulties imposed by climate and elevation. Consequently canal building was practically discontinued after 1850 and every energy was bent toward establishing rail connections throughout all parts of the country.

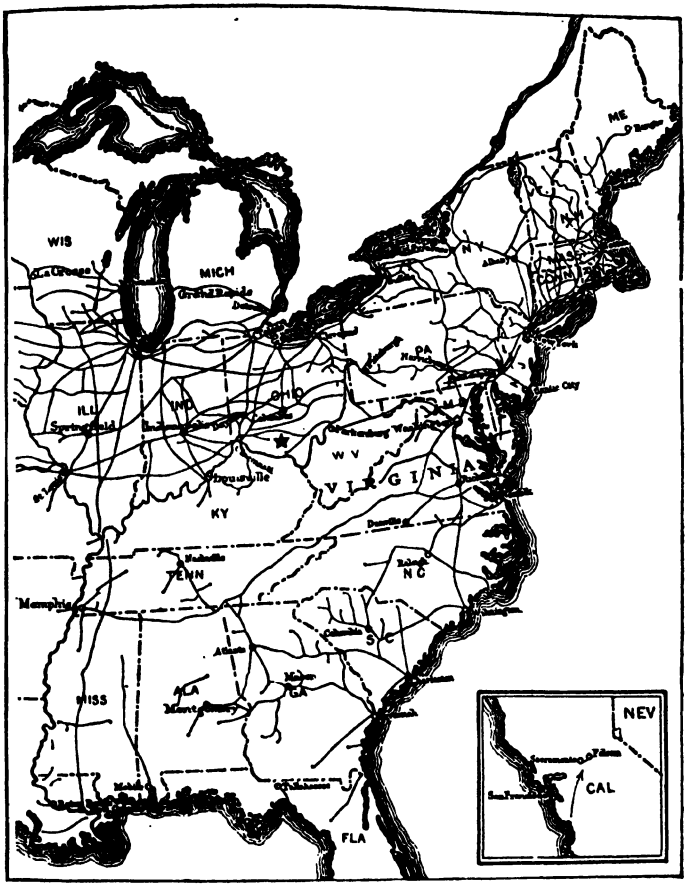
Conditions were extremely favorable for the success of railroad enterprises from 1850 to 1860. Encouraged by the increase in the volume of money resulting from the discovery of gold in California, business activity in all lines was unusually keen and railroad builders were sure of a large volume of traffic. On account of an eagerness for speculation existing throughout the country it was no difficult matter to secure private capital for the prosecution of transportation enterprises. Then, too, construction of railroads in the central West was greatly stimulated by grants of land from the public domain. In 1850 the first large grant was made, the Illinois Central Railroad being the recipient, and many other gifts of land were made during the next few years. The policy of giving lands to aid in railroad construction was followed by the United States for nearly thirty years, and it caused some of the lines in the Central and far Western States to be built earlier and more rapidly than they otherwise would have been. The individual States and many local governments also made large contributions of public funds to induce corporations to construct railways. The history and results of

government aid to railroads are given in Chapter XXVII.

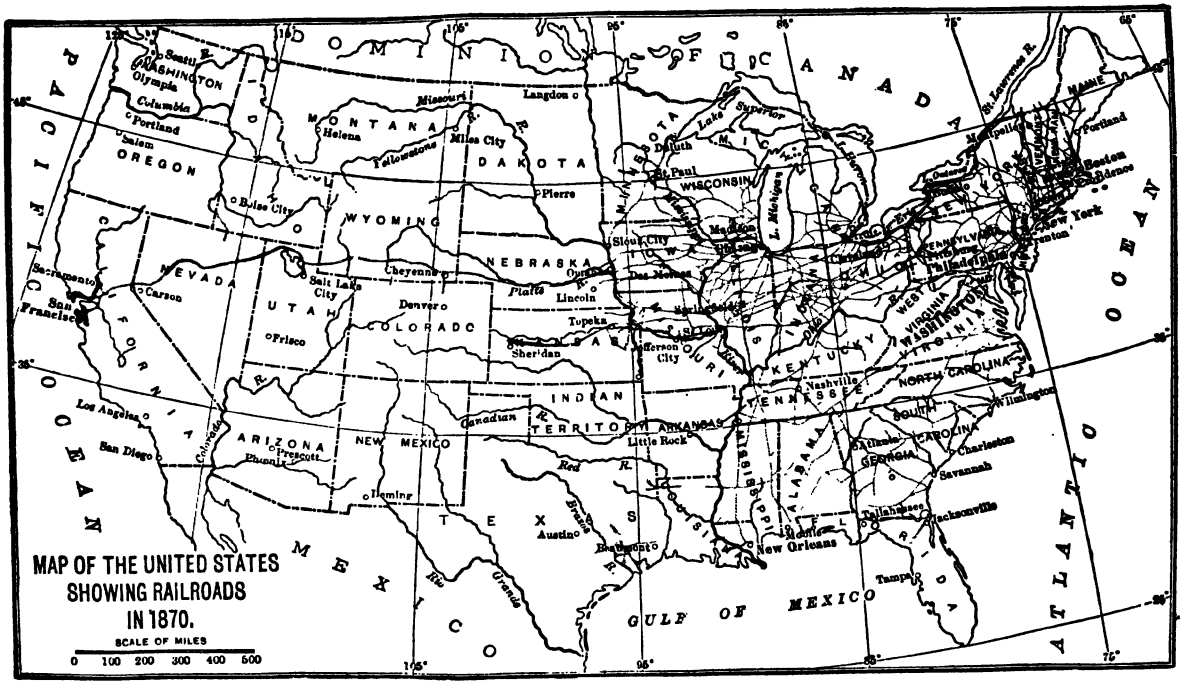
During the decade following 1850 many of the trunk lines of the large railway systems were completed. The Erie Railroad joined New York to Dunkirk on Lake Erie in 1851, and the same year connection between New York and Buffalo by way of Albany was established by the completion of the last of the chain of roads which were subsequently consolidated into the New York Central and Hudson River Railroad. The Baltimore and Ohio, the first railroad of the United States, reached the Ohio River, also, in 1851, and the following year a through rail route was completed between Philadelphia and Pittsburgh. In the South, also, trunk lines from the ports of Charleston and Savannah were extended as far west as Tennessee. All of these lines, and especially those in the North, made connections with new railway systems spreading through the Central States. By 1853 it was possible to travel from the Atlantic seaboard to Chicago by rail. In the following year the Chicago and Rock Island Railroad connected Chicago with the Mississippi River. Land grants, State subsidies and prosperous times combined to foster the rapid spread of the railway net in the middle West, and it was in that region that the greatest part of the construction of this decade took place, though both in the South and in the Atlantic coast section south of New England a large amount of new track was laid down. The period of expansion lasted until 1857, when the good times were interrupted by a sharp financial panic, which so seriously interrupted railroad building that it had not regained its previous activity when the great Civil War broke out and put another check upon industrial progress for half a decade.

One of the most notable features of railway progress during the decade from 1850 to 1860 was the beginning of the process of welding together numbers of short connecting railroads into long lines under a single ownership. The

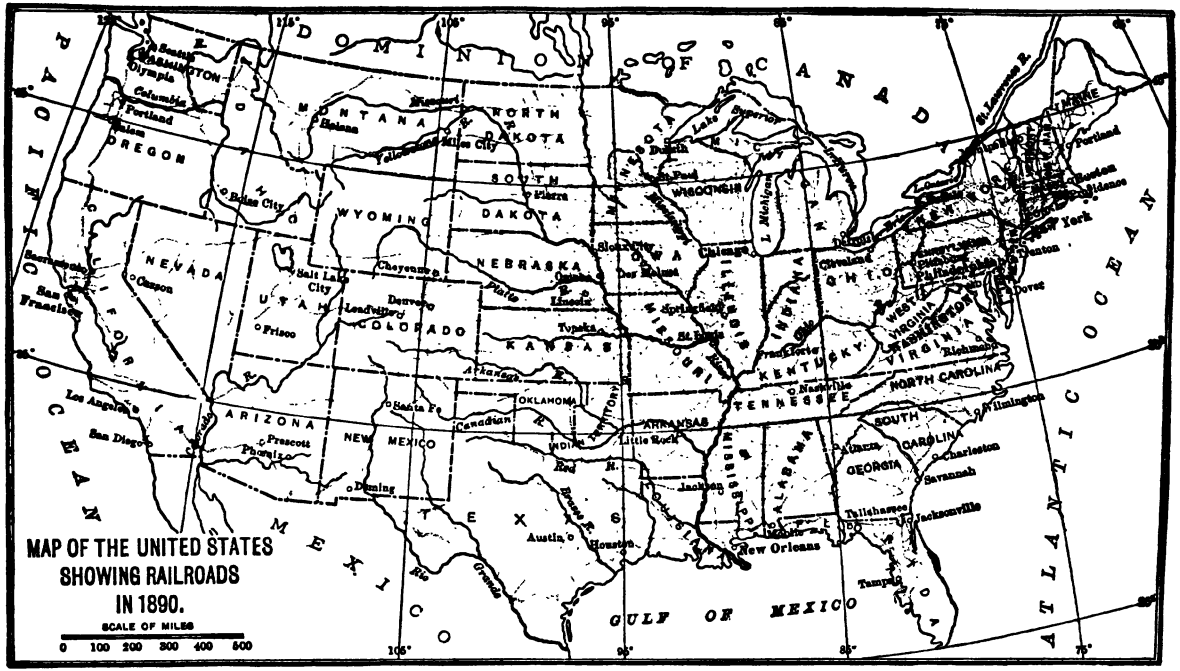

MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1850.
SCALE OF MILES
0 100 200 300 400 500
BRITISH POSSESSION
OREGON TERRITORY
UNORGANIZED
MINNESOTA TERRITORY
UTAH TERRITORY
NEW MEXICO TERRITORY
CALIFORNIA
MEXICO
TEXAS
ARKANSAS
LOUISIANA
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
KENTUCKY
TENNESSEE
OHIO
INDIANA
ILLINOIS
MISSOURI
IOWA
WISCONSIN
MICHIGAN
NEW YORK
PENNSYLVANIA
MAINE
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
DISTRICT OF COLUMBIA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
Columbia R.
Yellowstone R.
Missouri R.
Lake Superior
L. Michigan
Platte R.
Arkansas R.
Canadian R.
Red R.
Brazos R.
Rio Grande
Colorado R.
Ohio R.
Mississippi R.
Tennessee R.
Potomac R.
Hudson R.
Delaware R.
Connecticut R.
Kennebec R.
Penobscot R.
Androscoggin R.
Merrimack R.
Genesee R.
Susquehanna R.
Alleghany Mts.
Blue Ridge
Appalachian Mts.
Columbus
Salt Lake City
Sacramento
San Francisco
Santa Fe
Austin
Galveston
New Orleans
Mobile
Pensacola
Tallahassee
Jacksonville
St. Augustine
Savannah
Charleston
Wilmington
Raleigh
Norfolk
Richmond
Washington
Baltimore
Philadelphia
New York
Boston
Portland
Quebec
Montreal
Kingston
Toronto
Buffalo
Albany
Oswego
Rochester
Erie
Cleveland
Detroit
Milwaukee
Chicago
St. Paul
Davenport
Springfield
Naples
St. Louis
Kansas City
Louisville
Cincinnati
Indianapolis
Nashville
Knoxville
Chattanooga
Memphis
Little Rock
Vicksburg
Natchez
Montgomery
Columbus
Atlanta
Pittsburg
Harrisburg
Lancaster
Wheeling
Portsmouth
Zanesville
Columbus
Dayton
Toledo
Sandusky
Lafayette
Terre Haute
Evansville
Alton
Quincy
Burlington
Galena
Dubuque
Fond du Lac
Green Bay
Madison
Racine
Kenosha
Milwaukee
Detroit
Port Huron
Saginaw
Grand Rapids
Kalamazoo
Michigan City
Lafayette
Logansport
Peru
Fort Wayne
Toledo
Sandusky
Cleveland
Erie
Buffalo
Albany
Troy
Schenectady
Utica
Syracuse
Oswego
Rochester
Batavia
Lockport
Niagara Falls
Kingston
Montreal
Quebec
Lawrence R.
Portland
Augusta
Bangor
Boston
Worcester
Springfield
Hartford
New Haven
Providence
Newport
Concord
Manchester
Nashua
Lowell
Lawrence
Salem
Lynn
Portsmouth
Dover
Exeter
Keene
Brattleboro
Bellows Falls
Rutland
Burlington
St. Albans
Montpelier
Barre
Northfield
Windsor
White River Junction
Lebanon
Hanover
Claremont
Newport
Sunapee
Concord
Manchester
Nashua
Lowell
Lawrence
Salem
Lynn
Boston
Worcester
Springfield
Hartford
New Haven
Providence
Newport
Portland
Augusta
Bangor
Quebec
Montreal
Kingston
Toronto
Buffalo
Albany
Troy
Schenectady
Utica
Syracuse
Oswego
Rochester
Batavia
Lockport
Niagara Falls
Erie
Cleveland
Detroit
Milwaukee
Chicago
St. Paul
Davenport
Springfield
Naples
St. Louis
Kansas City
Louisville
Cincinnati
Indianapolis
Nashville
Knoxville
Chattanooga
Memphis
Little Rock
Vicksburg
Natchez
Montgomery
Columbus
Atlanta
Charleston
Savannah
Wilmington
Raleigh
Norfolk
Richmond
Washington
Baltimore
Philadelphia
New York



MAP OF THE RAILROADS IN THE UNITED STATES IN 1860


MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1870.
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
MONTANA
IDAHO
WYOMING
UTAH
COLORADO
DAKOTA
NEBRASKA
KANSAS
INDIAN TERRITORY
ARKANSAS
ARIZONA
NEW MEXICO
TEXAS
MINNESOTA
WISCONSIN
MICHIGAN
IOWA
ILLINOIS
MISSOURI
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
OHIO
INDIANA
PENNSYLVANIA
NEW YORK
MAINE
Seattle
Olympia
Columbia
Portland
Salem
Boise City
Helena
Missoula
Yellowstone
Miles City
Bismarck
Pierre
Langdon
Duluth
Lake Superior
St. Paul
Madison
Milwaukee
Chicago
Detroit
Toronto
Montreal
Ottawa
Buffalo
Rochester
Albany
Boston
Portland
New York
Philadelphia
Baltimore
Washington
Richmond
Norfolk
Wilmington
Charleston
Savannah
Jacksonville
Tallahassee
Tampa
Key West
Havana
New Orleans
Mobile
Montgomery
Atlanta
Nashville
Louisville
Cincinnati
Columbus
Indianapolis
Springfield
St. Louis
Jefferson City
Kansas City
Topeka
Lincoln
Omaha
Council Bluffs
Des Moines
Sioux City
Cheyenne
Denver
Pueblo
Sheridan
Salt Lake City
Frisco
Carson
Sacramento
San Francisco
Los Angeles
San Diego
Prescott
Phoenix
Yuma
Fleming
Canadian R.
Red R.
Arkansas R.
Little Rock
Austin
Brazos R.
Rio Grande
Colorado R.
Missouri R.
Mississippi R.
Ohio R.
St. Lawrence R.


MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1880.
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
DAKOTA
NEBRASKA
KANSAS
INDIAN TERRITORY
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
Olympia
Walla Walla
Wilkes
Columbia
Ellensburg
Salem
The Dalles
Roseburg
Boise City
Helena
Missoula
Yellowstone
Bismarck
Pierre
Langdon
Duluth
Lake Superior
St. Paul
Minneapolis
Milwaukee
Chicago
Detroit
Toronto
Ottawa
St. Lawrence R.
Montreal
Portland
Boston
Providence
New York
Trenton
Philadelphia
Baltimore
Washington
Richmond
Wilmington
Charleston
Savannah
Atlanta
Montgomery
Mobile
New Orleans
Jackson
Vicksburg
Memphis
Louisville
Cincinnati
Indianapolis
Springfield
St. Louis
Omaha
Council Bluffs
Des Moines
Dubuque
Winona
La Crosse
Green Bay
Lake Michigan
Red River
Arkansas R.
Missouri R.
Platte R.
Cheyenne
Denver
Pueblo
Trinidad
Alamosa
Santa Fe
Cimarron
Red Fork
Tucumcari
Albuquerque
Phoenix
Tucson
Yuma
Los Angeles
San Diego
San Francisco
Sacramento
Reno
Carson
Winnemucca
Salt Lake City
Ogden
Frisco
Rio Grande
Brazos R.
San Antonio
Houston
Galveston


MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1890.
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
NEVADA
UTAH
COLORADO
KANSAS
OKLAHOMA
ARIZONA
NEW MEXICO
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
Olympia
Portland
Salt Lake City
Cheyenne
Denver
Santa Fe
Los Angeles
San Francisco
San Diego
Chicago
Detroit
Cleveland
Boston
Richmond
Nashville
Atlanta
Charleston
Savannah
Jacksonville
Tallahassee
New Orleans
Houston
Austin
Little Rock
Kansas City
St. Louis
Omaha
Duluth
Lake Superior
Lake Michigan
Pittsburg
Buffalo
Albany
Wilmington
Tampa
Rio Grande

early roads were short, largely because the corporations of the fourth and fifth decades of the last century could not command the capital needed to build long roads or large systems. No enterprise now seems too great for a private corporation, but previous to 1850 that was not so. Some of the short roads were built with reference to their being a part of a through or general system, but many were constructed rather to connect local points. The necessity for providing facilities for uninterrupted travel and shipment became so imperative that railway consolidations were found to be necessary.

The New York Central Railroad and the Pennsylvania Railroad are good examples of these consolidations. In 1850 there were no less than ten distinct companies owning and operating the railroads composing the line connecting Albany and Buffalo, but by 1853 these roads were united under one management. In 1867 Commodore Vanderbilt secured a controlling interest in this line and in 1869 he brought about its consolidation with the Hudson River Railroad which he had acquired a few years previously. Meanwhile, several important branch lines had been added to the property, connecting lines west of Buffalo were soon leased, and thus the powerful New York Central system was built up.

The Pennsylvania Railroad Company was chartered in 1846 to construct a line from Harrisburg to Pittsburgh. The company secured control of the road between Harrisburg and Lancaster in 1849, and when in 1857 it bought up the main line of the public works of Pennsylvania, including the railroad extending from Philadelphia to Columbia by way of Lancaster, it came into possession of a continuous line of railway from Philadelphia to Pittsburgh. By building new lines and absorbing other companies the system was gradually extended through all parts of the rich territory lying between New York, Philadelphia and Washington on

one side and Chicago and St. Louis on the other. At the present time this great system comprises properties formerly owned by more than 200 companies, in addition to the extensive mileage constructed by the original corporation.

During the decade 1860-1870 the mileage of railways in the United States increased from 30,626 to 52,922. While the Civil War was in progress the amount of construction was necessarily small, but as soon as peace was restored, railroad building, in common with nearly all other lines of business, became unusually active. After 1866 construction proceeded at an unprecedented rate. The increase in 1869, amounting to 4,615 miles, was greater than the increase of any single previous year; and in 1870 the new track laid down amounted to 6,078 miles. 42,688

The most important single feature of the railroad history of the period was the completion in 1869 of the first transcontinental line. From Omaha to Ogden this line was built by the Union Pacific Railroad Company, which was chartered by Congress in 1862 and rechartered in 1864, while the Central Pacific Railroad Company, a California corporation, constructed that part of the road lying between Ogden and Sacramento. The route of this line is shown in the map of the railroads for 1870. The United States Government, desirous of having railroad connection established between California and the northern States of the East, gave great quantities of land and loaned large sums of money to the corporations undertaking this enterprise.

To other companies also, which engaged in the work of building railways across the dry plains and high mountains toward the Pacific coast, the Federal Government made liberal gifts of land; and those companies which did not receive Federal aid were freely subsidized by the States. Within a short time a number of transcontinental lines were under way, and though construction work was checked by the panic of 1873, the roads were ultimately pushed

through to the ocean. The Atchison, Topeka and Sante Fe reached Deming, N. M., in 1881, there connecting with the Southern Pacific line to San Francisco. In 1883 the Northern Pacific was completed and the same year the Southern Pacific opened a line from New Orleans to the western coast. Since then additional lines have been added, until there are now within the United States no less than seven distinct transcontinental railway systems. Three great lines stretch from ocean to ocean in Canada and another transcontinental route is being established by the construction of a road between the Missouri River and the Mexican coast.

The period of rapid railroad building which began in 1867 lasted until 1873, the railway net of the United States being increased by 33,000 miles during the seven years. Unfortunately, however, many of the new railways anticipated the needs of their time. Unable to secure traffic these roads afforded no return on the large investments which they represented, and their securities became almost worthless. The financial and industrial crisis of 1873 was largely due to the too rapid building of railways and to the overcapitalization of most of the new lines. Indeed the panic was precipitated by the failure of the Jay Cooke banking house of Philadelphia, which had underwritten a large issue of Northern Pacific bonds. The depression which ensued was severe and protracted, and during the five years following 1873 less than 10,000 miles of railway were constructed. By 1880, however, the country had recovered from the results of the panic, and the growth of the railway net again began to proceed at a rapid rate.

In 1880 there were 93,267 miles of railroad in the United States. In 1890 there were 163,597; 70,000 miles of railroad were built in this country in a single decade. This marvelous achievement is unparalleled in the economic history of any other country of the world. Within ten years the people

of the United States built as many miles of railroad as the people of the three leading countries of Europe had constructed in 50 years. The building operations were carried on in all sections of the country, but the largest increases were made in the States of the central and western portions of the country, where settlers were rapidly taking possession of the unoccupied agricultural and grazing sections of the vast public domain, and where the mineral wealth of the Cordilleras was causing cities and States to be established on the great Rocky Mountain plateau. Capitalists, confident of the growth of the country, and assisted by generous aid from the United States and from the local governments and individuals of the sections to be served, constructed railroads for the purpose of creating the traffic upon which the earnings of the roads must depend. In many cases the railroads built during the 20 years following the Civil War were pioneers entering unsettled regions beyond the Mississippi and Missouri Rivers and opening the highways by which immigration was able rapidly to occupy the prairies and mountain valleys of the great West.

After 1890 there were no spectacular increases in the railway mileage of the United States comparable to the increase occurring during the preceding 10 years. It seems that by 1890 the most urgent needs for railways had been met, that the country had been so well covered by the railroad net that only minor extensions were necessary. Moreover, the financial depression which began in 1893 and lasted for nearly five years compelled the railway companies to practice rigid economies and caused them to extend their systems slowly. During the five years from 1894 to 1898 inclusive the annual construction averaged less than 2,000 miles, the yearly increase being only a little more than 1 per cent, and the entire construction between 1890 and 1900 amounted to less than 30,000 miles. With the return of prosperous times in 1898 the rate of increase rose

again and for the next 12 years about 5,000 miles, or more than 2 per cent, were added each year to the railroad net of the United States. From 1910 to 1913 the average annual construction was slightly in excess of 3,000 miles. With the coming of the World War in 1914 railway building abruptly declined, and kept on declining until in 1920 only 314 miles of new line were completed in the United States. In fact during the four years following 1916 there was a greater mileage of old line abandoned in this country than of new line constructed, so that the railway net at the beginning of 1921 was actually less extensive than it had been five years before.

The railway mileage of Europe, the United States, and the world in 1914

Europe.....	218,000
United States..	252,000
The World....	691,000

The railway system of the United States now comprises over 253,000 miles of line. In 1914, before the World War began, when there were 252,000 miles in the United States, the railway lines of the entire world were 691,000 miles long. More than one-third of the railway mileage of the world was in the United States. The mileage in the United States exceeded that in all Europe by more than 15 per cent.

The magnitude of the railway system of the United States is only partially indicated by the figures as to mileage. The par value of the capital stock and the bonds comprising the capitalization of the railroads in this country amounted on December 31, 1918, to $20,784,832,841. Not all of these securities possessed a selling value; and it is not possible to say just how much capital was invested in the railroads of

the country at that time. The yearly rental paid to railroad corporations by the Government, during the period of gov-



AN ADVERTISEMENT ILLUSTRATING THE TRANSPORTATION SERVICE IN 1835

ernment operations, from December 28, 1918, to March 1, 1920, was $918,000,000. This sum, capitalized at 6 per cent, would give to the roads which the Government oper-

ated a value of $15,300,000,000, which is considerably less than the par value of their outstanding securities.

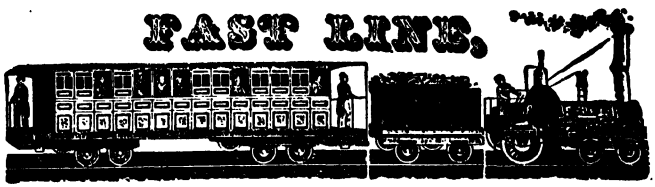
In 1913 Congress enacted a law directing the Interstate Commerce Commission to undertake the valuation of all the railroads of the United States. Before sufficient time had elapsed for the completion of the valuation, the Transportation Act was passed, February 28, 1920, under the terms of which the Commission was required to establish a level of rates which would yield to the carriers, as nearly as possible, a net operating income of 5½ per cent (or at the discretion of the Commission of 6 per cent) of the value of the carriers' property devoted to transportation. In reaching a decision as to what the level of rates should be to yield a net operating income of 6 per cent the Commission set a value of $18,900,000,000 upon all the railroads. This was some two billion dollars less than the valuation which the representatives of the railroads asked the Commission to adopt. When the appraisal of the railroads, provided for in 1913, is completed, we shall have a valuation based upon an actual inventory. Even then, however, because of differences of opinion as to what principles should govern the Commission in establishing final money values of physical assets, the valuation arrived at will by no means be satisfactory to all parties.

Using the estimate of $18,900,000,000 as the amount of capital invested in railways of the country, it is interesting to make comparisons with other industries. The capital stock and surplus of the 7,762 national banks of the United States in 1919 amounted to $1,984,964,000—about one-tenth the probable value of the American railroads. The total capital and surplus funds of all banks, national, State and private, and of the loan and trust companies in the United States in 1919 amounted to $5,000,000,000—about one-fourth the value of the railroads. The amount

of capital invested in railroads is little less than that invested in all the manufacturing industries of the country. The census of manufacturers in 1914 showed a reported capital investment of $22,547,574,000; while the

PIONEER

FAST LINE,



BY RAIL ROAD CARS AND CANAL PACKETS,

From Philadelphia to Pittsburgh,

THROUGH IN 3½ DAYS:

AND BY STEAM BOATS, CARRYING THE UNITED STATES MAIL,

From PITTSBURGH to LOUISVILLE.



Starts every morning, from the corner of Broad & Race St.

In large and splendid eight wheel cars, via the *Lancaster and Harrisburg Rail Roads*, arriving at the latter place, at 4 o'clock, in the afternoon, where passengers will take the Packets, which have all been fitted up in a very superior manner, having been built *expressly for the accommodation of Passengers*, after the most approved models of Boats used on the Erie Canal, and are not surpassed by the Boats used upon any other Line.

The Boats are commanded by old and experienced Captains, several of whom have been connected with the Line for the two last seasons. For speed and comfort, this Line is not excelled by any other in the United States.

Passengers for Cincinnati, Louisville, Natchez, Nashville, St. Louis, &c.

☞ They always be certain of being taken on without delay, as this Line connects with the Boats at Pittsburgh, carrying the Mail

OFFICE, N. E. CORNER OF FOURTH AND CHESNUT ST.

For seats apply as above, and at No. 200 Market Street; at the White Swan Hotel, Race Street; at the N. E. corner of Third and Willow Streets No, 31 South Third Street; and at the West Chester House, Broad Street

Philadelphia, April, 1845.

A. B. CUMMINGS, Agent.

AN ADVERTISEMENT SHOWING WHAT THE TRANSPORTATION SERVICE WAS IN 1837

value of farms and farm property in the United States on April 15, 1910, was placed at $40,991,000,000. The total wealth of the United States in 1912 was estimated to be $187,739,000,000, to which railways and their equipment contributed $16,149,000,000. Although it now costs but a small fraction of what it once did to transport persons and commodities a given distance, the amount of travel and traffic has so enormously increased, the demand for the service is now so many times what it was before the days of the railroad and other economical agencies for transportation, that the capital employed in transportation is far greater than in the days of the stagecoach and the towboat. The cheaper the service, the greater its magnitude and the larger the amount of capital devoted to the performance of the service.

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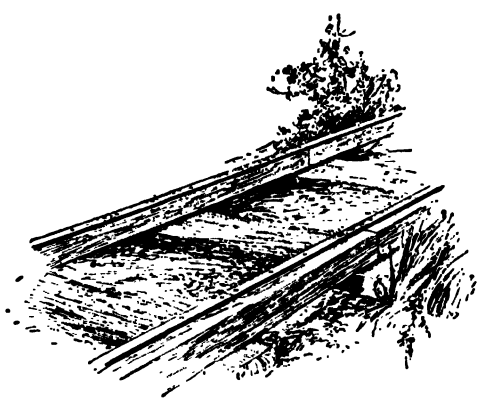
Statistical Abstract of the United States (annual).

CHAPTER IV

THE MECHANISM OF THE RAILROAD—DEVELOPMENT OF TRACK AND LOCOMOTIVE

Early track construction, 39. Development of the railroad rail, 39. Ties and ballast, 44. Early locomotives, 45. Later types of Locomotives, 51. Classification of locomotives, 57. Recent improvements in locomotives, 58.

ALTHOUGH this book is concerned with the transportation service, with transportation economics, rather than with the technical or engineering phases of the subject, a brief

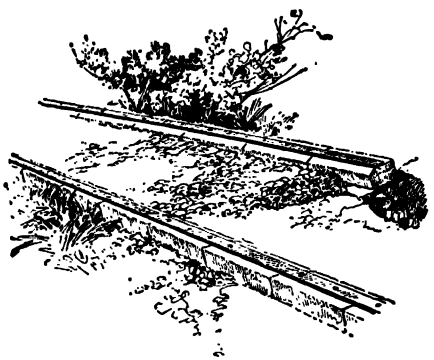


TRACK WITH WOODEN STRINGERS, SURFACED WITH STRAPS OF IRON

account of the growth and present efficiency of the mechanism by which the service is now performed will aid in the presentation of the subjects considered in this volume. The essential parts of the railway machine are three in number: the track, the locomotive, and the car. Each had crude be-

ginnings and each has reached its present condition of excellence by a long series of improvements. A few only of the most important of these improvements need be considered.

At the beginning of railroad construction, tracks of various designs were built, the chief thought of the builders being to secure a solid structure that would not permit the rails

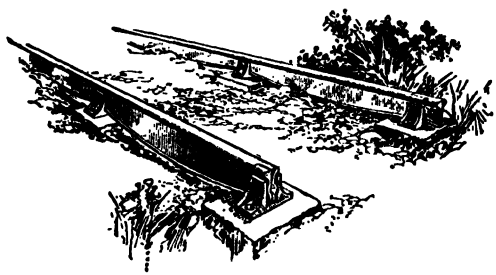


TRACK OF GRANITE SILLS PLATED WITH STRAPS OF IRON

to spread. In relation to the weight of the rolling stock and volume of traffic the track was comparatively heavy and expensive. This was particularly true in England and on some American railroads begun before 1835, up to which time American practice was more influenced by British methods than it was during subsequent years.

Three kinds of rails were used, the one most employed consisting of strong wooden beams, surfaced with strap iron. On the South Carolina Railroad the timber rails had a cross section measuring 6 by 12 inches, and the strap iron was 2½ inches wide and ½ inch thick. It was no uncommon thing for the iron straps on this type of rail to work loose, and curving upward under the weight of moving trains, form "snakeheads," which, when the wheels passed

under them, would penetrate the floors of cars, occasionally causing severe injuries to passengers. The danger involved in the use of such rails as well as their lightness caused the gradual substitution of rails made entirely of iron, all the early forms of which, to distinguish them from the "plate rails" were known as "edge rails." The most common form of the early edge rails used in this country was that known as the "parallel" rail, consisting of a heavy bar of iron having the same form of cross section throughout its length, with the top and base of about the same width and

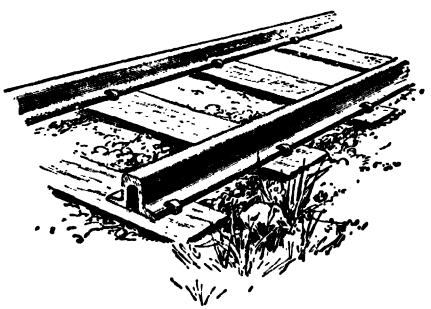


TRACK OF CAST IRON RAILS RESTING ON GRANITE BLOCKS

the sides slightly concave. Another form, shown in the illustration on this page, had no base and was deeper in the center than at the ends. All such rails were supported in iron pedestals or chairs placed upon blocks of stone or wood, and the track gauge was maintained by the use of crossties placed at intervals of 6 to 15 feet. The first edge rails were made of cast iron and for this reason their length seldom exceeded 3½ feet. Rolled-iron rails came into use in the United States about 1832, the first ones being about 15 feet long and weighing 40 pounds to the yard. Until 1844 all the rolled-iron rails used in the United States were imported from Great Britain, but in that year a rail mill was established in Allegany County, Md., and in the following year, another at Danville, Pa. From that time the number

of factories producing rolled-iron rails grew very rapidly and an increasing proportion of the rails used came from domestic mills.

The roadbed of the Columbia Railroad from Philadelphia to the Susquehanna River, constructed by the State of Pennsylvania between 1828 and 1834, illustrates in an excellent way the various types of construction followed in the early days of railroad building. This was a double track road 81.6 miles in length, the entire length of single track



ROLLED-IRON U-RAIL, 1844

being 163.2 miles, exclusive of sidings. For six miles of this distance the rails consisted of granite sills plated with flat iron bars. Eighteen miles of track had rails consisting of wooden string-pieces plated with thin bars of iron. These wooden string-pieces were laid upon wooden crossties placed four feet apart upon a secure foundation of broken stone. On two miles of the track rails made of iron were supported upon stone blocks, precaution being taken against spreading of the rails by placing stone sills across the track at intervals of 15 feet. The remainder of the track was constructed with edge rails supported in cast iron chairs of 15 pounds weight, which in turn rested upon stone blocks and wooden cross-sills placed alternately at distances of three feet. Throughout the entire length

the space between the rails was filled in with gravel or broken stone to form a horse path.

The roads constructed in this manner were needlessly expensive, and because of their rigidity were more destructive to rolling-stock than the railroad tracks are at the present time. American builders soon adopted the kind of track with which we are now familiar, the rails being placed upon wooden crossties resting either directly upon an earth foundation or upon a thin ballast of gravel or broken rock.

Builders tended early to substitute iron for wooden rails, but as late as 1860 there were several railroads in the United States, particularly in the Southern States, still having wooden rails surfaced with thin plates of iron. One of the early improvements of the edge rail was a rail rolled in the shape of an inverted U. This type of rail was never used extensively, however. The T-rail now universally employed was first designed about 1830, and by 1840 it was in use on several American railways. The first rails of this type were about 16 feet long and weighed 36 pounds to the yard. Both the U-rail and the T-rail could be spiked directly to wooden crossties and the use of the cast-iron pedestals or chairs was dispensed with.

The greatest improvement in rails came with the substitution of steel for iron in their construction. The first steel rails used in this country were imported from England by the Pennsylvania Railroad Company in 1863. Though the steel rails possessed a vastly greater durability than the iron rails, their excessive cost for a time prevented their general adoption. By 1870, however, the cost of rolled steel had become much lower and after that year the quantity of steel rails used multiplied with great rapidity. Not only were the new railroads equipped with steel rails, but on most of the older roads iron rails were replaced with steel. One-fourth of the mileage of railway track in the United States in 1880

was laid with steel rails, and by 1910 the proportion had increased to more than 98 per cent. Iron rails are now no longer made in this country. The manufacture of steel rails in the United States began in 1865, and since then the industry has expanded until it now occupies a position of high rank among the manufacturing industries of the nation, the output increasing from 2,277 tons in 1867 to a maximum of 3,977,887 tons in 1906. In 1913 the production amounted to 3,502,780 tons. It fell in 1914 to 1,945,095 tons, but under the influence of the war demand both at home and abroad, rose again, maintaining an average of 2,500,000 tons a year down to 1921. Until 1897 the steel employed in the manufacture of rails was made almost universally by the Bessemer process, but at the present time nearly three-fourths of the rails annually manufactured are rolled from open-hearth steel, and a small but growing number are rolled from steel made in electric furnaces. Attempts have been made in recent years to improve the texture of the steel used in rail manufacture by the addition of certain alloys, notably titanium, manganese, copper and nickel, but the alloy treated rails have not proved to be especially popular, and their production has not been large.

With the improvement of the design of the rail and of the material employed in its manufacture the weight of the rail has been steadily increased until at the present time the new rails being laid weigh from 85 to 150 pounds to the yard. One hundred pounds to the yard has become the standard upon most tracks where traffic is heaviest. For some time past the standard length of rail has been 33 feet, but at the present time some track is being laid with rails 60 feet in length. A rail 60 feet in length weighing 100 pounds to the yard weighs exactly one ton. The use of these heavy rails has been made necessary by the increased weight of engines and cars and by the increase in speed of passenger trains and freight traffic. Along with the improvements

in the track, the bridges and other structures have been strengthened to meet the necessities of modern transportation methods, so that in spite of the greater cheapness of material as compared with the early days of railway building, the roadbed of today is much more expensive than was that of 50 years ago. With few exceptions, the early roads had but a single track, and, indeed, today those having a relatively small volume of traffic have only one track. As the business over a line increases a second track usually becomes necessary, and some roads find difficulty in handling their business even with four-track lines.

With the adoption of the T-rail the use of granite blocks and wooden sills to support the rails was discontinued, and in their place the wooden sleeper or crosstie was employed. On account of its great durability and because it holds spikes more firmly than other kinds of wood, oak, and particularly white oak, has been used most extensively as timber for crossties, though pine, fir, cedar, chestnut, cypress, tamarack, hemlock and other woods are also employed. The steady and rapid depletion of the hardwood forests of the United States has caused a great advance in the price of crossties in recent years, and railroads have attempted to meet the problem of increased maintenance costs by using other material than wood for crossties and by treating the cheaper soft-wood ties with some preservative substance which will give them a greater degree of durability. Attempts to introduce steel ties have as yet met with no marked success. The first cost is comparatively high, and it has been found that the side thrust of the heavy rolling stock on the rails has a tendency to shear off the bolts with which the tie and rail are fastened together. Ties of concrete have also been made, but their high cost and extreme rigidity seem likely to prevent their general use.

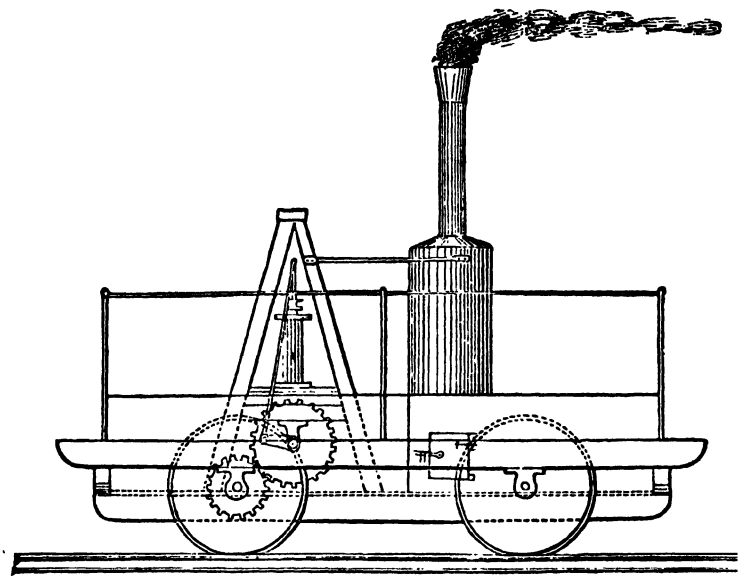
To retard decay wooden ties are treated, and such good

results have been obtained, that most of the large railroads of the United States now use wooden ties only after they have been subjected to some preserving process. Many roads possess treating plants of their own, where not only ties but other timbers employed for ordinary construction purposes are treated. The two most common methods of preserving wooden ties are by treating them with creosote oil or with a solution of zinc chloride. These liquids protect the vegetable fibers of the wood from the action of water and air, and consequently the life of a tie treated by either process is greatly prolonged. Notwithstanding the success of tie preservation, however, the growing scarcity of timber is causing a steady advance in the cost of wooden ties, and it is likely that in the future the use of some form of steel tie will become general.

To make it possible to maintain a level track and to distribute evenly the load of moving trains the railway track is usually laid upon a layer of ballast from 9 to 18 inches in thickness, consisting of some free-draining, easily worked material. Crushed rock, the pieces varying from 1½ inches to 3 inches in thickness, makes the best ballast, though its first cost is greater than that of other materials employed. Gravel is widely used, but it is dustier and less firm than crushed rock, and it affords poorer drainage. Some of the other materials utilized for ballast are slag from iron furnaces, cinders and burnt clay.

The development of the *locomotive* in the United States has had an interesting history. It must be remembered that when the first railroads were constructed it was not yet certain that the use of steam traction would be possible, and on several roads, notably the Baltimore and Ohio, the Mohawk and Hudson, and the Philadelphia and Columbia, locomotives were preceded by horses. The Charleston and Hamburg Railroad in South Carolina was the first road

built solely with reference to the immediate use of steam for motive power, though the first locomotive actually run upon an American road was used on a short portion of a line between Carbondale and Honesdale, Pa. This locomotive, the Stourbridge Lion, was imported from England in 1829. It proved too heavy for the trestles of the road, however, and it was never put into regular service.



Peter Cooper's Locomotive, 1830

Locomotive building in the United States began in 1830. Indeed, experiments were begun the previous year by Peter Cooper and others. Peter Cooper expected financial gains from the successful completion of the Baltimore and Ohio, and when it seemed uncertain whether locomotives could be run on a road having grades and sharp curves, Cooper designed a little engine called the Tom Thumb, which weighed barely a ton, but which succeeded, in August 1830,

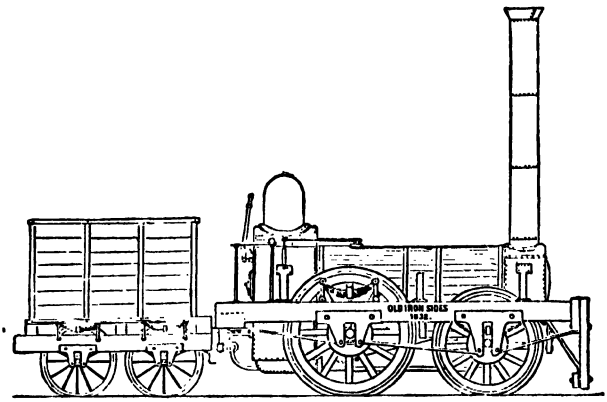
in hauling 4½ tons around curves and up grades at a speed of 12 to 15 miles an hour, and did much toward demonstrating the possibility of using steam locomotives on American railroads.

The first locomotives constructed in the United States for actual service on a railroad were built in New York City at the West Point Foundry Works. Locomotive No. 1 was the Best Friend, erected in 1830, and put into service that year on the Charleston and Hamburg Railroad. The following year the West Point was delivered to the same company. The third locomotive to come from the West Point Foundry Works was the De Witt Clinton, also built in 1831, and put into use on the Mohawk and Hudson Railroad between Albany and Schenectady. Machinists in New York, Baltimore, York, Pa., and elsewhere were studying and experimenting, so that within two years from the time when the first tracks were laid American builders had demonstrated their ability to construct locomotives adapted to the requirements imposed by American conditions. Among the firms which early undertook locomotive construction was the one founded in Philadelphia by Matthias Baldwin, whose first engine, the Old Ironsides, appeared in 1832. Up to June 1, 1920, the Baldwin Locomotive Works constructed more than 45,000 locomotives, and in prosperous times it builds more than 2,000 each year.

The influence of George Stephenson, of England, and of his celebrated locomotive, the Rocket, was felt in the United States, but, considering the undeveloped condition of American industries in 1830, a surprisingly small number of English engines were imported. The needs of our railroads were mainly supplied by our own foundries and shops. Nor were British models followed to much extent. American designers followed new lines in order to meet novel conditions. They were so successful in making engines that would work on curves and climb grades

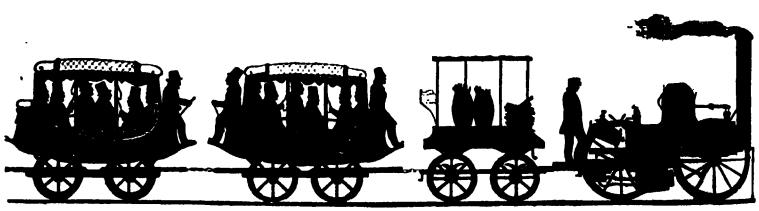
that American locomotives soon began to be sold in England.

As compared with the locomotives with which we are



THE OLD IRONSIDES, 1832

now familiar, those built in 1830 seem tiny and curiously designed. The first locomotives constructed for actual service weighed from 3 to 5 tons; the weight of the De Witt Clinton was 3½ tons. The English engines imported were

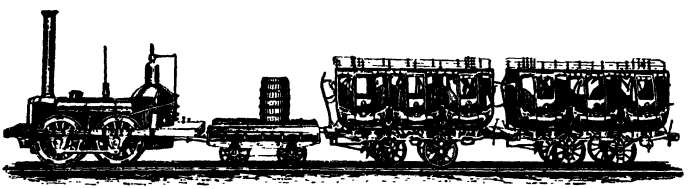


DE WITT CLINTON ENGINE AND TRAIN, 1831

double that weight and proved too heavy for the tracks with rails of wood surfaced with strap iron. The John Bull engine, shown in the illustration, was imported in 1831 for use on the Camden and Amboy line, the line connecting

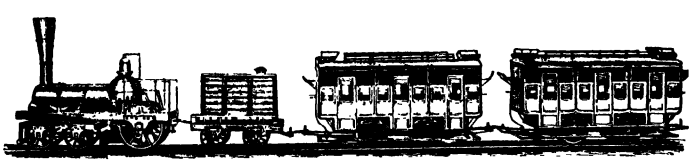
New York and Philadelphia. It weighed 10 tons, and was the heaviest engine run up to that time. Indeed, its great size was a positive disadvantage to the company for some time.

The American locomotives and cars, unlike the English and those on the Continent, where English models were



JOHN BULL ENGINE AND TRAIN, 1831

generally followed, early adopted a swivel truck. After the first few years practically all American locomotives had eight wheels, four driving wheels under the rear part of the engine and a four-wheeled truck carrying the fore part of the boiler, the truck being fastened to the engine by means of a bolt which permitted the truck to swing or

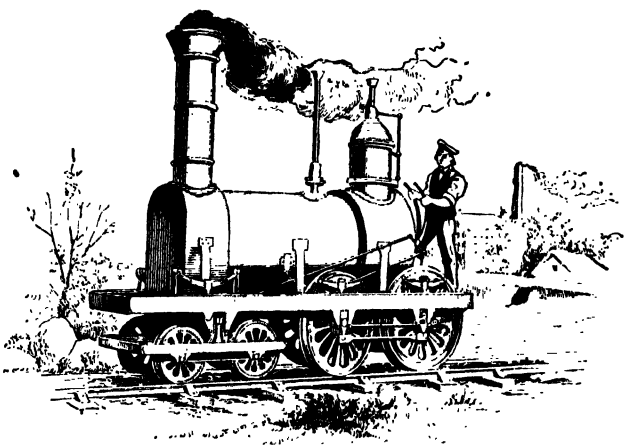


LANCASTER ENGINE AND TRAIN, RUN ON PENNSYLVANIA STATE RAILROAD, 1834

swivel through several degrees and enabled the engine to round sharp curves. The swiveling truck seems to have been thought of by several people about the same time. Ross Winans, of Baltimore, used it under a passenger coach in 1831. The same year he placed a truck under the forward part of a locomotive. In 1831, moreover,

the truck principle was applied to two locomotives built in New York. One was designed by Horatio Allen, while chief engineer of the Charleston and Hamburg Railroad, and the other by John B. Jervis, chief engineer for the Mohawk and Hudson Railroad. The engine planned by Jervis was more in accordance with subsequent designs, and to him the greater credit is due.

The American or Campbell type is the name applied

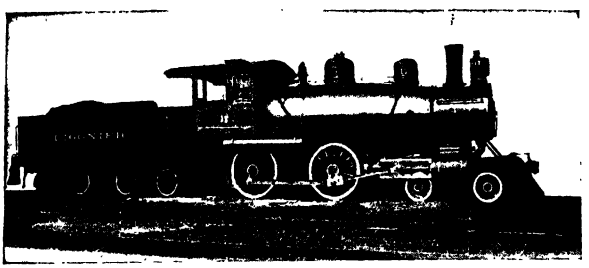


First Campbell Locomotive, 1836

to the locomotive having four connected driving wheels and a four-wheeled truck. The first engine of this design was built in 1836 by James Brooks for Henry R. Campbell, both of Philadelphia. This speedily became the prevailing design for the passenger service, and has remained until the present day the approved form of passenger locomotive, except when special conditions require the use of a locomotive of a different type.

One essential feature of the locomotive awaited introduction until 1837, and that was the use of equalizing beams by means of which the weight on the driving wheels

ceases to be affected by the inequalities of the elevation in the track. Since 1837 locomotives have been so constructed that each driving wheel can have a vertical motion independent of the other wheels, and can so move without changing very greatly the pressure imposed by the wheel on the track. Equalizing beams were first used in the Hercules, designed by Joseph Harrison, Jr., and constructed by the Baldwin Locomotive Works. Another notable improvement was accomplished in 1842 when Matthias Bald-



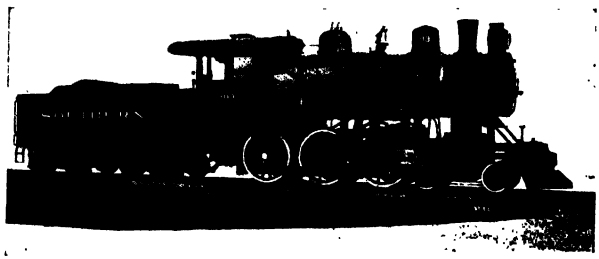
AMERICAN (4-4-0) TYPE OF LOCOMOTIVE

Built by the Baldwin Locomotive Works for the Ligonier Valley Railroad in 1914. Weight, engine and tender, 200,000 pounds; weight on driving wheels, 81,400 pounds.

win invented the flexible beam truck by the use of which the different pairs of locomotive drivers in passing a curve could move laterally in opposite directions, the axles yet remaining parallel to each other.

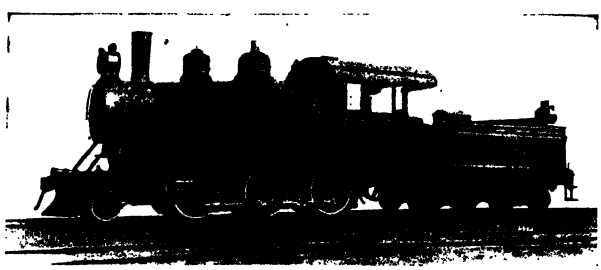
With the steady and rapid increase of the railway business there came a need for locomotives of greater power. Since the tractive force exerted could be augmented by increasing the weight resting on the driving wheels, additional power was secured by the construction of heavier locomotives. To enable the track to sustain the heavier equipment the weight was distributed by adding to the number of drivers and thus extending the area of the base

upon which the weight rested, the difficulty of rounding curves with locomotives having long wheel bases being



TEN-WHEEL (4-6-0) TYPE OF LOCOMOTIVE
Built by the Baldwin Locomotive Works for the Southern Railway in 1914. Weight, engine and tender, 240,000 pounds; weight on driving wheels, 109,200 pounds.

solved by using flexible beam trucks and journal boxes with considerable lateral play, by making part of the drivers



MOGUL (2-6-0) TYPE OF LOCOMOTIVE
Built by the Baldwin Locomotive Works in 1915. Weight, engine and tender, 205,000 pounds; weight on driving wheels, 104,650 pounds.

without flanges, and by increasing slightly the gauge of the curved portions of the track.

Ten-wheeled locomotives, having a four-wheeled leading truck and three pairs of connected drivers came into use

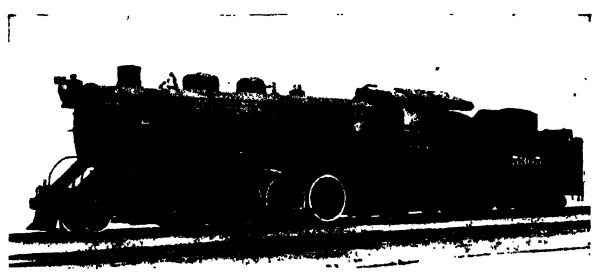
about 1850, and they have ever since been popular in both freight and passenger service. About 1865 the Mogul loco-



CONSOLIDATION (2-8-0) TYPE OF LOCOMOTIVE

Built by the Baldwin Locomotive Works for the Pennsylvania Railroad in 1915. Weight, engine and tender, 431,000 pounds; weight on driving wheels, 226,900 pounds.

motive was developed from the ten-wheeled type by decreasing the number of truck wheels from four to two. This

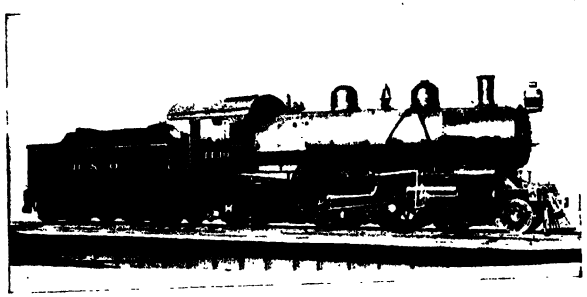


MIKADO (2-8-2) TYPE OF LOCOMOTIVE

Built by the Baldwin Locomotive Works for the Chicago, Burlington and Quincy Railroad in 1915. Weight, engine and tender, 497,500 pounds; weight on driving wheels, 239,900 pounds.

change increased the proportion of weight resting on the drivers from 70 per cent to 85 per cent and consequently gave a much greater tractive force. For many years the

Mogul was the leading type of locomotive for heavy freight service, and it is still used extensively. The Consolidation type, with four pairs of connected drivers and one pair of truck wheels, introduced about the same time the Mogul was first used, is now employed in freight service more extensively than any other single type of locomotive. The Decapod, with a two-wheeled truck and 10 connected drivers, and the Centipede, with a similar truck and 12 drivers, have also been used to some extent. The difficulty of backing a locomotive with such a long wheel base around curves



ATLANTIC (4-4-2) TYPE OF LOCOMOTIVE

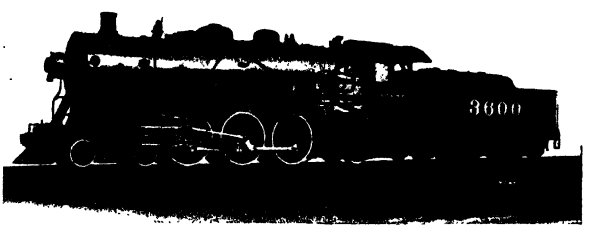
Built by the Baldwin Locomotive Works for the Baltimore and Ohio Railroad in 1910. Weight, engine and tender, 344,000 pounds; weight on driving wheels, 116,000 pounds.

led to the adoption of a two-wheeled trailing truck, giving rise to new types, the Santa Fe, the Prairie and the Mikado. The additional truck not only facilitated the backward motion of the locomotives but it also made possible the construction of deeper and wider fire boxes, thereby permitting the development of greater power. The Mikado, with a leading and trailing truck, each two-wheeled, and four pairs of connected drivers, has become very popular for heavy freight service.

Additional types of locomotives having the four-wheeled leading truck have also been developed, the two most

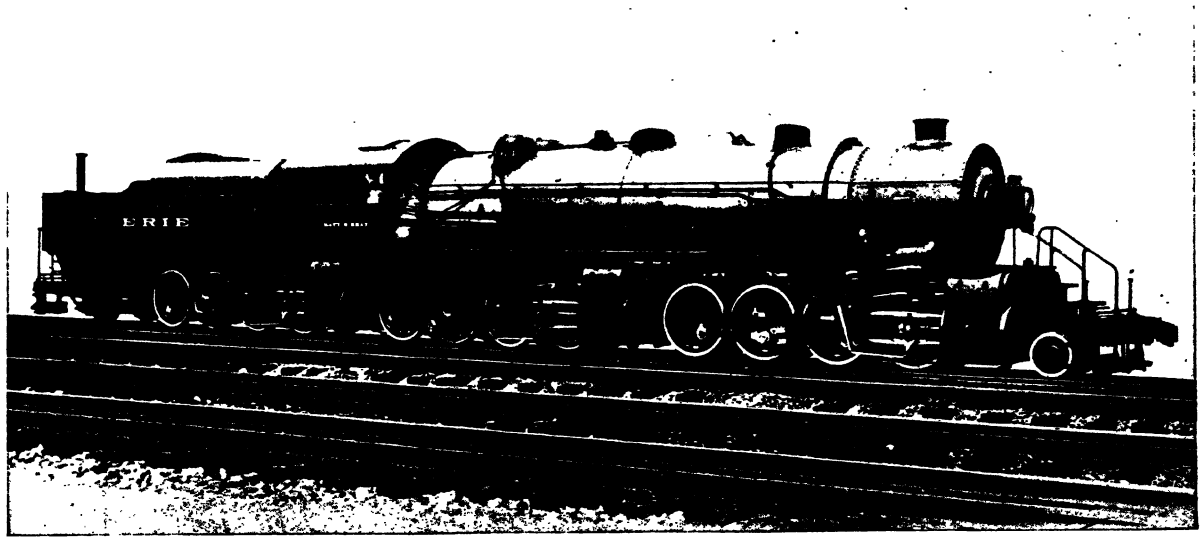
notable ones being the Pacific and the Atlantic. The former has three pairs of connected drivers and a two-wheeled trailing truck, and is used extensively in heavy passenger and fast freight service. The Atlantic type, first constructed in 1895 by the Baldwin Locomotive Works for the Atlantic Coast Line Railroad, has two pairs of connected drivers and a two-wheeled trailing truck. Like the American, which it most closely resembles, it is used chiefly for fast passenger service.

The latest step in the development of steam locomotives



PACIFIC (4-6-2) TYPE OF LOCOMOTIVE
Built by the Baldwin Locomotive Works for the Atchison, Topeka and Santa Fe Railway in 1915. Weight, engine and tender, 506,000 pounds; weight on driving wheels, 172,550 pounds.

for heavy freight service has been the construction of the articulated locomotive. The difficulty of rounding curves with locomotives having more than five pairs of drivers attached to a rigid frame led to the introduction of this type, designed, in 1888, by a Frenchman, Anatole Mallet, after whom it is named. It has one fire box and one boiler, but has two sets of drivers and cylinders attached to separate frames which are connected by a movable joint. This arrangement divides the wheel base into two independent units, and the jointed frame affords the flexibility necessary to enable the locomotive to pass around sharp curves. The first Mallet locomotive constructed in the



TRIPLEX ARTICULATED (2-8-8-8-2) LOCOMOTIVE

The largest and most powerful locomotive ever constructed. Built by the Baldwin Locomotive Works for the Erie Railroad in 1914. Weight, 853,050 pounds; weight on driving wheels, 761,600 pounds.

United States was built in 1904 by the American Locomotive Company at Schenectady, N. Y., for the use of the Baltimore and Ohio Railroad. The use of this type has increased greatly in recent years, especially on those roads having a heavy traffic crossing mountain grades, where it is employed for pusher service. Some Mallet locomotives have been built with articulated boilers, but in most of them the boilers are of rigid construction and only the frames jointed. At the Baldwin Locomotive Works several Mallet locomotives have been built by combining and rebuilding two locomotives of ordinary type. In 1913 this firm constructed for the Erie Railroad a triplex articulated locomotive having three sets of drivers and cylinders, two sets under the boiler and one set under the tender. Each set of drivers contains four coupled pairs, the total length of the driving wheel base being 71½ feet.

The simplest system of classifying locomotives is that known as Whyte's classification, in which each type, except the Mallet, is described by a series of three figures, the first figure indicating the number of leading truck wheels, the second the number of drivers and the third the number of trailing wheels. Thus the American type is the 4-4-0, the Atlantic the 4-4-2, the Ten-wheel the 4-6-0, the Pacific the 4-6-2, the Mogul the 2-6-0, the Consolidated the 2-8-0, the Prairie the 2-6-2, the Mikado the 2-8-2, the Santa Fe the 2-10-2, etc. Switching locomotives as a rule have their entire weight on the drivers and are built without truck wheels, the most common type being the 0-6-0. In designating the Mallet locomotives four figures are used instead of three, the second indicating the number of drivers under the forward portion of the boiler and the third the number under the rear portion. Thus a locomotive of the 2-6-6-2 class would have a leading and a trailing truck of two wheels each and two sets of drivers, three pairs in each set. The triplex articulated locomotive is a 2-8-8-8-2

type. This system of classifying of course gives little information about the engine other than the number and kind of wheels. The motive power department of a railroad has a much more complex system of classification, in which, by using a combination of figures and letters, locomotives are classified according to other important structural features. The Pennsylvania Railroad Company issues a classification list covering more than 150 different kinds of steam locomotives.

During the past sixty years a great many important improvements have been made in locomotive construction. Among the most valuable innovations has been the introduction of a compound locomotive, in which the steam, in passing from the boiler to the exhaust, is used in two cylinders in succession. By this means a greater amount of power is derived from a given quantity of fuel. Some compound locomotives are equipped with two cylinders, the high pressure cylinder being on one side and the low pressure cylinder on the other; some possess four cylinders, a high and a low pressure cylinder on each side, placed either tandem or one above the other; while still another kind, the balanced type, has the axes of the four cylinders in the same horizontal plane, the high pressure cylinders being situated between the locomotive frames and their piston rods connected to cranks attached to the axle of a pair of the driving wheels. On the railroads of the United States compound engines are on the whole but little used, it being the consensus of opinion among motive power officials that the saving made in fuel by their use is more than offset by the high cost of maintenance of the somewhat complicated machinery necessarily employed in their construction. Mallet locomotives, however, are all compound.

Another important fuel-saving device recently introduced is the steam superheater. After passing from the boiler, the steam, before entering the cylinders, passes through

a system of tubes, either contained in the smoke box or extending from a drum in the smoke box back into the boiler flues, where its temperature is greatly increased over the point reached in the boiler. The superheated steam has no greater pressure than non-superheated steam but it has a greater duration of maximum expansive power, inasmuch as it must be cooled more before it reaches the point of condensation. Superheating affords more units of power per unit of fuel consumed, and since the maintenance costs of various types of superheaters are small compared to the saving of fuel which their use permits, they are installed in many locomotives. Heavy locomotives now built are also equipped with automatic mechanical stokers, which convey the coal from the tender to the fire box. In the far West, where coal is scarce and oil plentiful, most of the locomotives use crude petroleum for fuel.

The ordinary locomotive in use today weighs as much as twenty-five of the engines used at the beginning of railroading. In 1850 a locomotive weighing more than 50,000 pounds was considered very large. A locomotive weighing 200,000 pounds is now not considered notably heavy, and many reach a weight of 500,000 pounds. The giant triplex Mallet locomotive, referred to above, which is the largest and most powerful locomotive ever built, has a total weight, when in working condition, of 853,050 pounds, of which 761,600 pounds rests on the drivers. With the increase in the size of locomotives the tractive power has been enormously increased. Half a century ago a train load of 200 tons would have been a heavy one to handle, but now 2,500 to 4,000 tons are hauled over long distances by the largest types of freight engines, and loads of more than 6,000 tons are not uncommon. The achievements in the increase of speed of locomotives have been less wonderful, but the schedule speed of 60 to 65 miles an hour for passenger trains, now regularly maintained on many Ameri-

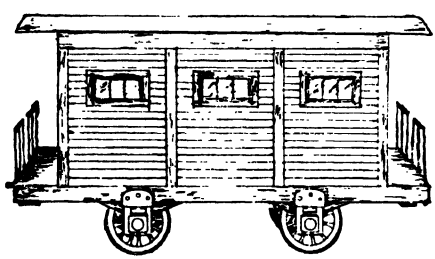
can and European roads, is double the maximum rate possible a half century ago, and the discomforts and risks of the present are incomparably less than those formerly incident to travel.

CHAPTER V

THE MECHANISM OF THE RAILROAD (*Concluded*)—THE CAR, TERMINAL AND OPERATION

Early passenger cars, 62. Sleeping cars, 63. Steel passenger cars, 63. The air brake, 65. Freight cars, 66. Terminal facilities, 68. The passenger terminal, 69. The freight terminal, 72. Electric telegraph, 76. Railroad signaling, 77. Electrification of steam railroads, 78. References, 82.

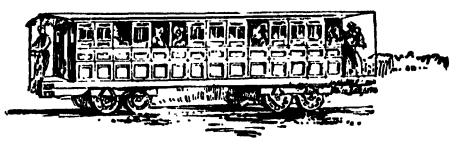
THE improvements in travel and traffic have resulted quite as much from the progressive adaptation of the vehicle to the service to be performed as from betterments in the roadbed and the locomotive. The *passenger coaches*



PASSENGER COACH, 1835. USED ON THE PORTAGE RAILROAD OVER THE ALLEGHANY MOUNTAINS, PENNSYLVANIA

first used were similar to the stagecoaches, and this was so because carriage builders in making vehicles for the railroad followed the designs with which they were familiar. Indeed, in Europe the passenger coaches in use today, with their small compartments entered from the side, indicate that the stagecoach influenced the style of construction. Coaches of the European type were used on a few of the early American roads.

The construction of coaches for American railroads, differing totally in design from those used on highways, began with the opening of the first lines. The first railroad coaches were not unlike the four-wheeled caboose of today in appearance, but after 1830 longer vehicles mounted on two four-wheeled trucks began to be used, and the typical American coach soon came to differ from the European in being longer, in having the doors at the ends, and in having a central aisle. This form of coach was probably adopted because the curves in our tracks required the use of trucks under the cars as well as under the engines.



An Early Passenger Coach

Many improvements in design were necessary to produce the comfortable coaches of today. Better ventilation was secured by raising the central half of the roof and inserting "deck-lights." This was first done in 1836, but it was several years before the raised roof became a feature of all passenger cars. The roofs of the best railway coaches now have special appliances for admitting fresh air and are equipped with ventilators, so constructed that when the train is in motion the rush of the atmosphere creates a suction which draws the impure air from the interior. Even with these improvements, however, the problem of maintaining pure air in crowded cars has not yet been fully solved.

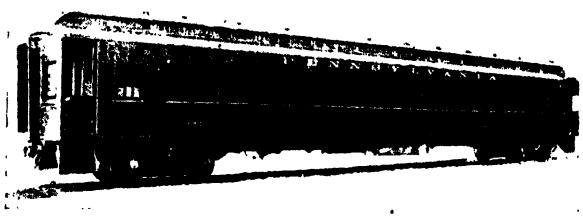
For 30 years the jolting caused by the loose coupling of cars was a great discomfort to travelers, but patent automatic couplers and spring and friction draft gears, of which there are many kinds in use, have now obviated that trouble.

At first cars were heated with rude wood- or coal-burning stoves. Not only would such stoves fail to heat the coaches properly, but in case of a wreck they would set fire to the train, adding greatly to the loss of life and property. Passenger trains are now heated throughout with steam from the locomotive. The old oil and gas lights are fast being replaced by electric lights, the current for which is supplied by a small dynamo supported on the truck and run by a belt encircling the car axle.

The sleeping car, as we know it today, originated with George M. Pullman, who built the Pioneer A in 1864. Cars had been fitted up with tiers of bunks on each side as early as 1837, but the discomforts of such accommodations were so great that sleeping cars did not become popular until the Pullman and Wagner services became available. The sleeping car was soon followed by the buffet or hotel car, and that by drawing room and dining cars. The necessity for passing from one car to another suggested the vestibuling of trains. The idea originated in 1852, when a man by the name of Waterbury designed a vestibuled car. Some cars were fitted up with vestibules that year, but the first vestibuled train like those with which we are familiar was designed and built by Pullman and was run on the Pennsylvania Railroad in 1886.

Within the last 20 years a noteworthy improvement has been made in passenger cars by the substitution of steel for wood in their construction. The greatest advantage of the steel car comes from the security it affords the traveler in case of accidents. It is seldom telescoped, and cannot be splintered, in collisions or when overturned, and it is, of course, non-inflammable. The superior safety of steel cars has led not infrequently to agitation for a law compelling their universal use. No such law has been passed, however, and it is not probable that any will be necessary. Railroad companies find it more economical in

every way to use steel cars; they last longer, are less expensive to maintain, and their use brings about a great decrease of claims for damages. The building of wooden cars has already been virtually discontinued, and on all the railroads of the country wooden coaches are constantly being replaced by coaches of steel. Out of 56,000 cars in use for passenger service in 1918, nearly 14,000 were of steel construction throughout, and 6,000 possessed steel underframes. On January 1, 1921, the Pennsylvania Railroad Company had in service 2,133 steel passenger cars and 1,549 wooden pas-



All Steel Passenger Coach
Pennsylvania Railroad Company

senger cars, all of the steel cars having been acquired since 1907.

The air brake, invented by George Westinghouse and first successfully applied to passenger trains in 1868, was one of the most valuable of all the inventions by which the improvement of the transportation service has been brought about. In 1887 the air brake had been developed so that it was practicable to use it on freight trains, and at the present time the law requires all trains in the United States to be equipped with air brakes by which the train can be controlled by the engineer. The first air brake was known as the straight-air brake. Compressed air stored in a tank under the locomotive was admitted through the train

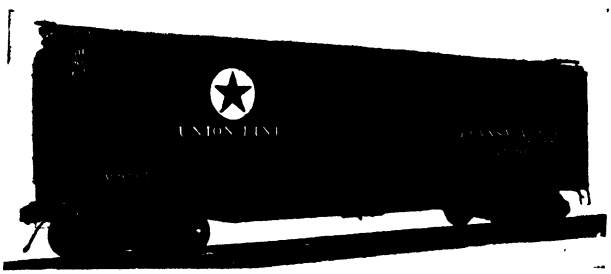
pipe to cylinders under the coaches, the pressure on the pistons in the cylinders being transmitted to the brake shoes by a series of connected levers. The defect in this type of brake was that it was not automatic, and if the train broke in two, severing the train-pipe connection, the brake system on the entire train became useless.

In 1872-73 Westinghouse perfected his first automatic brake, the essential features of which are still retained in air-brake construction. Under each car is placed an auxiliary reservoir, containing a supply of compressed air, which, by the action of an ingeniously devised valve is admitted to the brake cylinder upon the *decrease* of the air pressure in the train pipe. When a train is accidentally uncoupled the escape of air from the train pipe automatically causes all brakes on the train to be set. Refinements of this mechanism have consisted mainly of devices by which the engineer can bring about more speedily the action of the brakes throughout the entire train. In the original form the application of the brakes was made by releasing the air only through a valve in the cabin of the engineer. The result was that in a long train the brakes nearest the locomotive were set several seconds in advance of the brakes near the rear of the train, and cars were subjected to a series of damaging shocks. Often, too, the train when starting, would break in two, because of the tardy release of the brakes on the rear cars. The "quick-action" brake and its modifications overcame these difficulties and made it possible to use the air brake on the longest trains. Recently the Westinghouse Company perfected a pneumatic brake for passenger trains, in which the admission of air to all the brake cylinders is accomplished simultaneously by the action of electricity.

The air brake reduced by about 90 per cent the time and the distance required to stop trains with the old hand-brake system. It has greatly lessened the risks to which employees

are exposed, has decreased the danger of travel and has made possible much greater speed for freight as well as for passenger trains.

The *freight car* is built today in many designs for the better accommodation of the numerous kinds of traffic to be handled. Starting with only open and box cars, crudely constructed, mounted on four wheels and having a loading capacity of three to five tons, the freight equipment of railroads has come to include the large variety of cars



All Steel Box Car
Pennsylvania Railroad Company

with which we are now familiar, provided with many mechanical appliances for saving labor costs and minimizing damages to property in transit, and capable of carrying loads of over 50 tons. Many of the improvements in car construction, as, for instance, the swiveling truck having four or more wheels, improved couplings, and air brakes, were as applicable to the freight car as to the passenger coach.

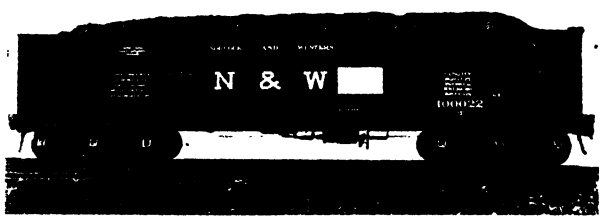
Specialization in freight cars continues with the growing volume of traffic. There are special cars for carrying cattle, dressed meats, oil, coal, coke, iron ore, fruit, milk, and many other commodities, a special car being brought into use whenever there develops a new kind of traffic running regularly and in large volume and not capable of

being handled advantageously in the ordinary box or flat cars. The invention of the refrigerator and heater cars was incidental to this specialization, and has been of great value to producer and consumer. The distribution of perishable commodities throughout the entire country can be carried on during all seasons of the year, to the great advantage of both producer and consumer. The products of the tropical and the cold sections of the world are now available for the people of both regions at all times, and the volume and value of freight transported are greater than they could be when the movement of many kinds of goods was dependent upon the weather.

The increase in the capacity of the freight car, particularly in the United States, has been quite as remarkable as the growth in the size of locomotives. With the construction of stronger tracks and with the use of steel rails the railroad companies have taken advantage of the economy resulting from the use of large cars. The larger the cars the less the "tare" or weight of the vehicle as compared with the weight of the cargo. The larger the cars the greater the live load the engine can haul. Thirty years ago 20 tons was the standard carload in this country, and such a weight would today be considered a heavy one in most countries in Europe, but for some time past the box and open cars in the United States have been built to carry 30 tons and more. The average capacity of the 2,427,460 freight cars in use in this country in 1918 was 41 tons. Of this number about five-twelfths were box cars, the average capacity of which was about 37 tons. The average capacity of coal cars, which made up more than a third of the total freight car equipment, was 48 tons. Few box cars of less than 30 tons capacity are now built and few coal cars of less than 50 tons. Some coal cars of 120 tons capacity are in use. A cut of a 90-ton car is shown on page 68. So much greater was the capacity of the average coal car

than that of other cars, that this type, though comprising only about two-fifths of the total number of cars, furnished four-ninths of the total car capacity. In the construction of freight cars, as of passenger cars, steel is being extensively employed. In fact the building of cars with a capacity of 50 tons or more has been made possible only through the use of steel in the truck frames and in the body of the car. Coal cars are now made almost exclusively of pressed steel, and box cars of steel construction throughout are by no means uncommon.

The facilities for caring for railway traffic, both passenger and freight, at stations or terminals constitute an

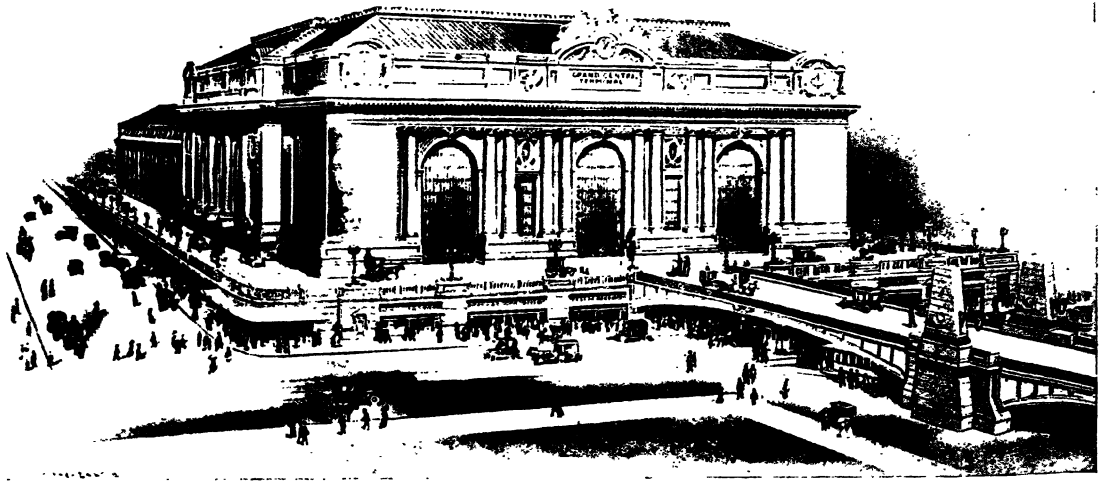


ALL STEEL GONDOLA CAR
Six-wheeled trucks; capacity, 90 tons. Norfolk and Western Railway

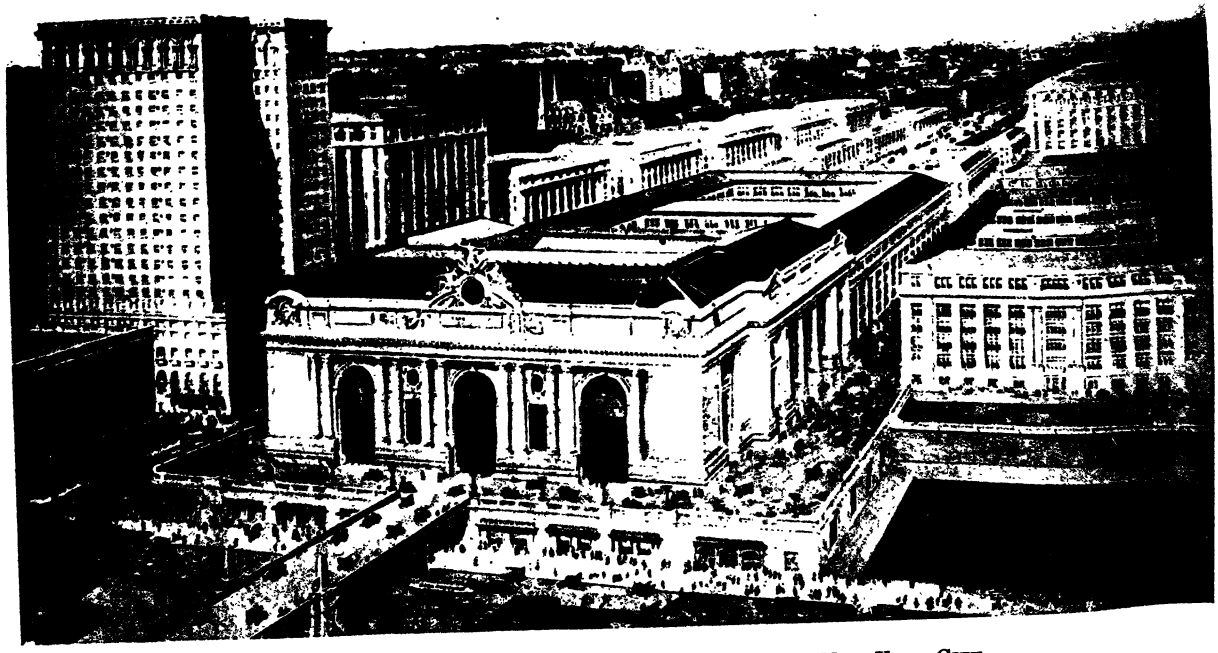
important part of the mechanism with which the transportation service is performed, and in the improvement of these facilities the progress has been no less remarkable than in the improvement of the roadbed, locomotives and cars. To the end of the sixth decade of the nineteenth century the deficiency of station and terminal equipment was a notable feature of all American railways; public houses and inns often supplied the place of passenger stations, and nearly all the adequate freight houses belonged to forwarding agencies. Today one of the most highly developed and efficient, as well as one of the most costly, portions of the railroad mechanism is the equipment provided

for the reception and delivery of traffic and for the movement of traffic within terminal limits.

The modern passenger terminal possesses two essential parts: the coach yard, where cars are stored, inspected, cleaned, repaired, and, in cold weather, heated before being attached to the locomotive; and the passenger station where passengers enter and leave the trains. The large passenger station always has four distinct parts, the ticket and baggage offices, the train shed, the concourse and the waiting rooms, and in addition to these may usually be found other facilities, such as restaurants, retail stores, news stands, and often the general offices of the railway company. Most of the great passenger stations of this country are equipped with a huge, overhanging train shed entirely covering a series of stub tracks terminating near the gates through which the passengers pass between the concourse and the platforms lying along the track. In the most recently built stations, a part of the tracks at least are through tracks, this type affording a much greater train capacity in proportion to the amount of space occupied. When through tracks are used passengers go to and from the track platforms by stairways leading to subways or balconies connecting with the concourse and waiting rooms. The large vaulted train shed is gradually disappearing. In the terminals where electricity is used to operate all trains the space above the tracks may be occupied by office buildings; in other places each platform between the tracks is covered with a small shed, which is cheap to construct, admits the sunlight, and, by not extending over the track, permits the smoke from the locomotives to pass immediately to the open air; and in some instances the tracks are all covered with a single low roof provided with slots over each track, through which the smoke may escape. The concourse or head-platform lies between the track platforms and the station building proper. It usually adjoins the main waiting room; and it



GRAND CENTRAL STATION, NEW YORK CITY

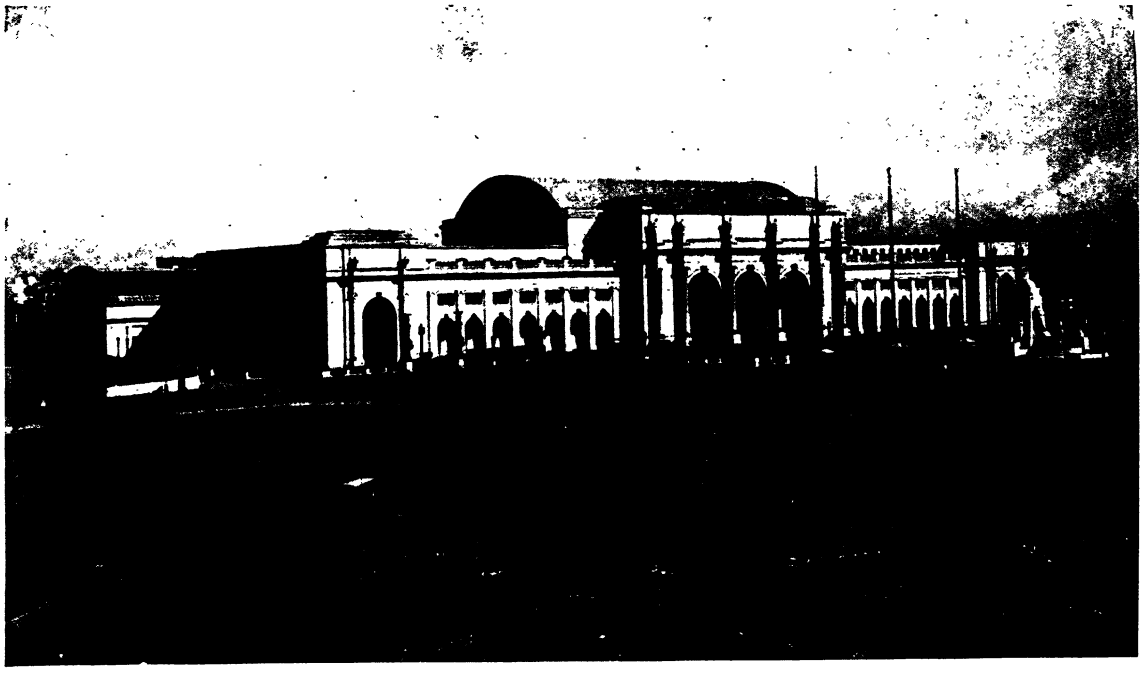


BIRD'S EYE VIEW OF THE GRAND CENTRAL TERMINAL, NEW YORK CITY

is equipped with street entrances and exits so that passengers may enter and leave without passing through the station building. The design of the waiting rooms in passenger stations depends upon the character of the traffic to be accommodated. The South Station at Boston is used by more passengers in a single year than any other station in the United States, but since the traffic consists to a large extent of suburban residents there is less need for extensive waiting rooms than in railway stations where a relatively large proportion of the traffic is made up of through passengers changing from one line to another and consequently needing a place in which to wait for trains. In the Chicago and Northwestern Station at Chicago, for instance, where large numbers of persons wait daily for connecting trains, very extensive facilities are provided for their accommodation, including such conveniences as a laundry for the use of immigrants, an emergency hospital, bathrooms, and private rest rooms.

A noteworthy feature of the large passenger stations constructed in the United States in recent years is the great advance in architectural design. The Union Station at Washington, probably the most beautiful passenger station in the country, harmonizes admirably with the other attractive buildings of the city, and the magnificent Pennsylvania and Grand Central stations in New York not only show the results of earnest endeavors to provide the most desirable accommodations for the traveling public, but also represent the splendid effects obtainable in railway architecture. They constitute a distinct mark in the artistic progress of the nation.

The terminal facilities for handling freight traffic are much more complicated than those provided for passenger traffic. Ordinarily one large passenger station is sufficient for a city; but stations and sidings for the reception and delivery of freight must be provided often at dozens



UNION STATION, WASHINGTON, D. C.

of places throughout urban districts and special equipment installed for handling various commodities. Passengers are able to look out for themselves, to go to and from the station, purchase their transportation, select the proper trains, load and unload themselves, and when necessary change from one line to another. Freight traffic is loaded and unloaded by hand or by machinery, weighed, sorted and placed in the proper cars, and the cars themselves sorted, classified and sent by various routes to their destinations. For the reception of freight transported in less than carload quantities adequate space must be supplied; and at points of delivery such freight must be stored until the consignee is notified of its arrival and comes to take it away. Documents must be made out for each shipment and an accurate accounting system established to safeguard the interests of both the railroad and its patrons.

There are two classes of freight houses, the inbound freight house, where freight is received from the cars for delivery to consignees, and the outbound freight house, where freight is delivered to the railroad for transportation. Ordinarily a single freight station possesses both kinds of freight houses, together with a number of team tracks, where carload freight may be handled directly between wagons and cars. Some team tracks are equipped with cranes for the loading and unloading of heavy articles, such as machinery, structural steel, and stone. Large industrial plants nearly always have their own private side tracks by which freight is received from and delivered to the railroad.

At terminals where large quantities of certain commodities are handled special facilities are provided. Huge elevators are built and grain is loaded and unloaded by machinery. Pens are provided for the care of all kinds of live stock. The modern equipment for handling iron ore and coal represents the most complete use to which machinery has been put for loading and unloading heavy freight quickly and

cheaply. Electrically operated hoists, traveling cranes, and car dumps accomplish in hours what formerly took days to perform, and at a fraction of the previous cost. Buckets holding several tons of ore are filled automatically, carried several hundred feet, and dumped, all in a few seconds; and loaded cars are picked up bodily and their contents of coal or ore emptied into the hold of a vessel or upon a storage dump.

The sorting, drilling and marshaling of the innumerable cars in which the freight is conveyed take place in the freight yard. Incoming trains are broken up and the cars classified according to their destination—freight house, team track, industrial siding or connecting railway line; and cars arriving from these various places are sorted and made up into outgoing trains. When an incoming train reaches the receiving track of the yard, the locomotive and caboose are detached, inspectors look over the train to see if the cars are in proper condition, and carders mark the various cars to indicate their destination. The train is then broken up, the various cars being sent to tracks in the classification yard to join cars from other trains destined for the same place. The classification is accomplished either altogether by switching locomotives or by pushing the cars over a "hump" or artificial hill, from which the force of gravity will roll them to their proper tracks. From the classification yard the various cuts of cars are taken by switching locomotives to freight houses, sidings or other points within the terminal limits. In making up outgoing trains the operation is reversed. From the freight houses and sidings the switching locomotives bring the cars, which are classified in the same manner, the cars having certain destinations grouped together, and pushed out on the departure track, where an engine and a caboose are hitched on and the train started on its way.

Somewhere near the center of the large freight yards,

which are situated at points where there are numerous connecting lines or branch railways, is a transfer freight house. At the transfer house "mixed" cars of less than carload freight, or cars having packages for a large number of scattered points, are unloaded, the freight sorted, and "straight" cars made up, that is, cars containing freight for only one station or at the most for a small number of stations which occur in order along a particular division. The necessity for the transfer house arises from the fact that at each of the numerous freight houses in a city small amounts of freight are received for a large number of places, and furthermore many cars from connecting lines contain mixed cargoes. It saves both time and space to collect these "mixed" cars at the transfer house, and load the freight into other cars with a proper arrangement of the various shipments. Large freight yards cover several hundred acres of ground, have many miles of track, and are capable of handling thousands of cars each day. The operation of a great yard is one of the most important phases of railway work. Congestion in a single yard impedes the traffic of an entire railway system; the speed with which the traffic can be handled in the yards determines more than any other single factor the efficiency of the railroad.

In connection with the freight yard, and, if possible, situated near the passenger coach yard, too, is the locomotive terminal where the locomotives are taken after a road trip, to be inspected, cleaned, and furnished with fresh supplies of coal and water. A "roundhouse" provides the facilities necessary for light repairs to the engines. When heavy repairs are needed the locomotives are sent to the "shops," usually located at some important divisional point. The shops of the Pennsylvania Railroad at Altoona not only repair locomotives and cars, but even build part of the company's rolling stock.

In the operation of trains between terminals the electric

telegraph has been the chief agency for securing speed and safety. At the time railroads were first constructed, when a train on a single track line was delayed, an opposing train was compelled to wait, sometimes for hours, at the designated passing point until the delayed train arrived. By using the telegraph to convey orders to opposing trains another meeting point could be designated and useless delays avoided. All regular trains have time-table schedules, but delays are, of course, frequent, and the train dispatcher is constantly employed in expediting traffic with telegraphic orders, regulating movements according to existing conditions. Furthermore all extra and special traffic, of which there is a vast amount, is guided over the line by the dispatcher. In recent years the telephone has been used to an increasing extent for train dispatching, there being 80,000 miles of road operated by telephone in 1915.

An additional degree of safety and a greater speed of train movement are secured by the use of block signals. The railroad is divided into short units or blocks, at the beginning of each of which is a signal, which by night or day indicates to the engineman whether it is safe for his train to proceed. There are three general classes of block signal systems, the manual, the controlled manual, and the automatic. The manual block system is one in which the signals are operated manually upon information received by telegraph or telephone. The controlled manual block system is the same as the manual except that the signals at the ends of each block are electrically connected in such a way that the coöperation of the signalmen at both ends of the block is required in order that a signal may be given for a train to proceed. The automatic system is one in which the signals are operated by an electric or pneumatic mechanism actuated by the trains themselves in such a way that protection both in the front and in the rear is afforded. The science of signaling has been so developed that by the

use of two or more signal arms on a single mast a variety of indications may be given to approaching trains, and the speedy movement of traffic greatly facilitated. At the close of the calendar year 1919 the installation of block signals had been accomplished on 107,155 miles of the railway line in the United States, 39,149 miles being equipped with automatic signals and 68,006 with non-automatic. Few devices have contributed more to safety of railroad operation than the block signal installations.

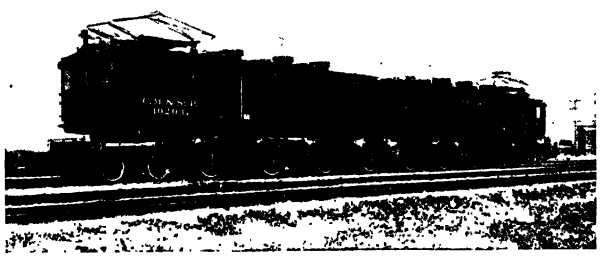
For several years attempts have been made to perfect some device by which a train could be stopped automatically should the engineman disregard or fail to see a signal indicating a "closed block." Numerous contrivances have been used with a fair degree of success, and on a few roads "automatic stops" have been installed at some points. There is, however, a lack of agreement among railroad officials and employees as to the desirability of using such devices, the argument against them being that any attempt to shift the responsibility for safety to a mechanical device inevitably results in impairing the vigilance of the train crew. It is thought that if automatic stops were universally used, the enginemen and firemen on the locomotives, placing their dependence on the automatic control, would become careless of signals, and if accidents should happen because of failure of the automatic mechanism, they would hold themselves blameless.

At crossings, junction points and other places where several currents of traffic converge, safety of operation is secured by the use of interlocking signals and switches. Interlocked appliances are so connected that their movements must succeed each other in a predetermined order, and, whenever a route is cleared for one current of traffic, all routes, the movements on which would interfere with the permitted movement, are automatically closed.

An important change in the technical development of rail-

ways in recent years, that has commanded much attention, is the substitution of electricity for steam as motive power. There are three special fields in which electrical power can be advantageously used on steam railways at the present time: in tunnels and subways, in city terminal and suburban service, and in the handling of freight and passenger traffic on heavy mountain grades.

In tunnel work smoke and gas render the steam locomotive highly objectionable, and wherever possible steam rail-



ELECTRIC LOCOMOTIVE

Built by the General Electric Company for the Chicago, Milwaukee and St. Paul Railway. 3,000 volt direct current type; length, 112 feet; weight, 564,000 pounds; weight on driving wheels, 448,000 pounds.

ways are using electric locomotives for this service. The Baltimore and Ohio Railroad has used electric power in its tunnels in the city of Baltimore since 1895; in the Grand Trunk Railroad's tunnel under the Detroit River electric locomotives are employed; and all trains passing through the Pennsylvania Railroad tunnels into and under New York City are hauled by electric locomotives.

The advantages of electric power for use in city terminals and in suburban service arise not only from the avoidance of the smoke and gas of the steam locomotive, but also from the fact that electric power affords a service of greater flexibility. The unit of service may be made small or large

at will. The cost of operating a steam locomotive is about the same whether two or three or a dozen coaches are hauled; electric cars, each equipped with a motor, may be operated singly or in trains, and the cost of operation, as far as power and equipment are concerned, varies directly with the number of cars used. Many railroads are now electrifying their big city terminals. By the electrification of the New York terminals of the New York Central and the New York, New Haven and Hartford railroads and by the use of electric locomotives in the Pennsylvania tunnels, the steam locomotive has been virtually banished from New York as well as from the railway lines for some distance out of the city. The Pennsylvania Railroad has electrified, for passenger services, a part of its lines in the Philadelphia terminal district; and in Chicago steps are being taken toward the electrification of all the lines within the city.

On mountain grades the electric locomotive possesses the advantage of being able to exert its maximum power for an indefinite length of time, while the steam locomotive has difficulty in maintaining a maximum steam pressure during a protracted period of heavy work. Another advantage resulting from the use of electricity in mountainous sections is that the length of summit tunnels can be made greater, and thus the summit elevation of the line be made lower, than they might wisely be if steam locomotives were to be used in hauling trains. Furthermore, the economy of electricity is much greater when it can be generated by water power, and in mountainous regions ample water power is usually available. Two of the transcontinental railroads have already utilized their opportunities to make use of electric equipment in the Rocky Mountain region, and doubtless other roads will adopt the same practice.

In addition to the above services, some trunk line railroads have adopted electric traction for local traffic on sections of the road where the population is dense and fre-

quent service is necessary, leaving only the freight and through passenger trains to be hauled by steam locomotives. The Rochester branch of the Erie Railroad and the main line of the West Shore Railroad between Utica and Syracuse have been electrified, and the New York, New Haven and Hartford Railroad uses electric power for a considerable portion of its passenger service in various sections of New England. By handling local passenger traffic in this way a more frequent service can be given, and furthermore,



GAS-ELECTRIC MOTOR CAR

Built by the General Electric Company for the Illinois Central Railroad. Length, 70 feet; center and rear entrances; baggage compartment 8 feet in length.

the service can be coördinated more closely with that of connecting urban and interurban electric lines.

On branch lines, where the traffic is not heavy, many steam railroads throughout the country have installed gas-electric motor cars, and in some places such cars are even used on main lines for the purpose of giving more frequent local passenger service. The use of these cars saves the cost of installing expensive electrical equipment and at the same time it affords an economical and satisfactory method of handling small units of traffic.

The marvelous development of electric transportation in recent years and the manifest advantages which electric

traction affords for certain varieties of service have given rise to the question as to whether it might not be a wise policy to equip all railway lines electrically and abandon entirely the use of the steam locomotive. The results of careful studies of this problem by engineering and transportation experts indicate that an early general abandonment of steam power would be uneconomical. However, as coal resources diminish, more and more reliance must be placed upon water power as a source of energy for the work of the world. Therefore, while there is no immediate prospect of general railway electrification it is certain that the use of electric traction will have a steady growth, and it is not improbable that the future will see the general substitution of electricity for steam in all branches of the transportation service, and the mechanism of the railway will pass through even more important stages of development than have been witnessed in the past.

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CHAPTER VI

THE PRESENT RAILROAD SYSTEM OF THE UNITED STATES

Railroad mileage and number of corporations in 1914, 84. The three large territorial groups of railroads, 85. Territorial grouping into seven sections, 85. Grouping by ownership and control, 88. Supply of railroad facilities in the United States and foreign countries, 94. References, 96.

On December 31, 1918, there were 253,528 miles of railroad lines in the United States. Several of these lines had more than one track, and if the total length of the track in the various roads and in their freight yards be taken as the basis of length, there were about 385,000 miles of railroad track in this country, exclusive of the mileage of switching and terminal companies. This vast mileage was owned by about 1,900 corporations. Many of these corporations, it is true, were subsidiary to others, but according to the reports of the Interstate Commerce Commission, there were over 800 independent operating companies.

The railroad system of the United States as a whole is too vast and is composed of too many parts to be readily comprehended. It is impossible, at least for the ordinary mind, to carry the details of such a large and intricate picture as is presented by a railway net comprising 250,000 miles of line and spread over a country 3,000 miles in breadth. By dividing the United States into several natural territorial sections, and by classifying the railroad lines or systems according to those sections, and by grouping the railroads according to ownership, it is possible to obtain a gen-

eral picture of what for 'convenience' sake we term the American railway system.

The most general and frequent grouping of the railroads of the United States territorially is into three sections; one section, the eastern district, comprising that portion of the country north of the Ohio and Potomac Rivers and east of the Great Lakes and a line from Chicago through Peoria to East St. Louis and thence down the Mississippi River to the mouth of the Ohio River; another, the southern district, south of the Ohio and Potomac and east of the Mississippi; and the third, or western district, the region west of the first two. A basis for this grouping may be found in well-known differences in production, density of population, and other economic and social conditions prevailing in these three sections of our country. There are also sufficient differences in the freight business of the railroads in these sections to cause a distinct classification of freight to have been worked out for each of the three regions. Since 1910 the Interstate Commerce Commission has employed this grouping for the territorial analysis of the statistics of the railway business of the country. While this grouping of the railroads of the United States into three sections has been serviceable for purposes of freight classification, the sections are so large that further subdivision is necessary. Within each of these large groups there are distinct subdivisions, due in part to diversity of physical conditions, and in part to the fact that the railroads in different portions of the country have come, in a large degree, to be owned by a limited number of groups of capitalists.

The railway system of the United States as a whole may be divided into seven groups, each group occupying a nearly although not completely distinct section of the country. Within some of these sections the railroad system may be subdivided into two or more parts, dependent upon

whether a general or detailed classification is sought for. The first of these territorial groups of railroads comprises the New England States. The railroads in this section differ from those of other parts of the country, because they serve the region where population is densest; where the passenger business as compared with the freight is larger than in any of the other States, and where the local freight business as contrasted with the through freight is of relatively greater importance.

The region west of New England and the middle Atlantic seaboard, north of the Ohio and Potomac Rivers and east of the cities of Chicago and St. Louis, comprises another section of the country within which there is considerable unity in the operation and ownership of the railroad systems. The railroads in this group have the heaviest freight traffic of any roads in the country. Most of them were built from the East toward the West, for the purpose of bringing the agricultural, forest, and mineral products of the great central West to the Atlantic seaboard to supply our own and European markets, and for the purpose of giving the manufacturing industries of the northeastern section of the United States a western outlet for the products of the mills and factories. The railroads in this group are often spoken of as the "trunk lines," because the first through or trunk lines in the United States were those built to connect the Atlantic seaboard with the Great Lakes and the Ohio River. The corporations controlling these first trunk lines have extended their systems to Chicago and St. Louis, and the term "trunk lines" has come to be applied to the roads between the Atlantic seaboard and the central West.

Comprised within this trunk-line territory is a distinct subdivision of lines whose business consists chiefly of transporting anthracite coal from the Pennsylvania mines to the seaboard. Some of the hard coal mined in Pennsylvania

is handled by the trunk lines, but the larger part of this coal is mined and transported by other than the trunk-line companies.

The section south of the Potomac and Ohio and east of the Mississippi is usually spoken of as southern territory. The traffic conditions in southern territory differ from those in other parts of the country, and it is probable that the railroads in this part of the United States will always remain a fairly distinct group. The Alleghany Mountains separate the southern territory into two parts, one of which is tributary to the Gulf and the other to the Atlantic seaboard. To some extent the lines in these two parts are operated under separate managements, but there is manifest a marked tendency toward the unification of ownership and control of the lines in both parts of the southern territory.

To the west and north of Chicago and St. Louis, and including the chief grain-raising States of the United States, may be found another group of railroads. The roads in this territory are called the "granger" lines, a term that originated between 1870 and 1875, at the time when the farmers of the central West were organizing their so-called "granges," or societies. The granger roads radiate from three centers, the chief of which is Chicago. At the head of Lake Superior is another growing center of traffic, while St. Louis has always been an important point for the collection and distribution of the traffic from and to the agricultural central West.

South and west of St. Louis lies the southwestern territory, within which there is a large number of railway lines, some of them having St. Louis and Memphis connections, and others being more distinctly tributary to Gulf ports. A large part of the roads in this system were formerly controlled by Jay Gould and even yet many of the lines are spoken of as the Gould roads, though the con-

trol of the territory is now divided among several groups of capitalists.

West of the sections occupied by the granger and southwestern lines lies the territory occupied by the transcontinental or Pacific roads. These transcontinental lines have connections with Chicago and the Mississippi, and consequently the territory occupied by the transcontinental lines overlaps to some extent the granger and southwestern sections. The transcontinental lines are divided into two rather distinct groups, the northern and southern. Within the northern section are comprised the Great Northern, the Northern Pacific and the Chicago, Milwaukee and St. Paul. The southern section includes the Union Pacific, the Atchison, Topeka and Santa Fe, the Southern Pacific, and what was formerly called the Gould transcontinental line, made up of the Missouri Pacific, the Denver and Rio Grande and the Western Pacific.

One of the most interesting features of railway development in the United States has been the growth of the great railroad "systems." The beginning of the movement toward the consolidation of connecting lines was described in Chapter III, and an account was given of the early history of the Pennsylvania and the New York Central systems. In each of the three large railroad regions—Eastern Southern and Western—a few great railroad systems were developed after the Civil War, partly by the construction of additional mileage by the dominating companies of the systems, and partly by the lease and purchase of connecting lines. Frequently the absorbed lines were operated as a unit with the lines of the controlling system, but in many cases the operating organization of subsidiary roads was retained, and though becoming a part of the great systems they were operated independently. For example, the Pennsylvania System, including the lines east and west of Pittsburgh, consisted in 1917 of about 12,000 miles of line

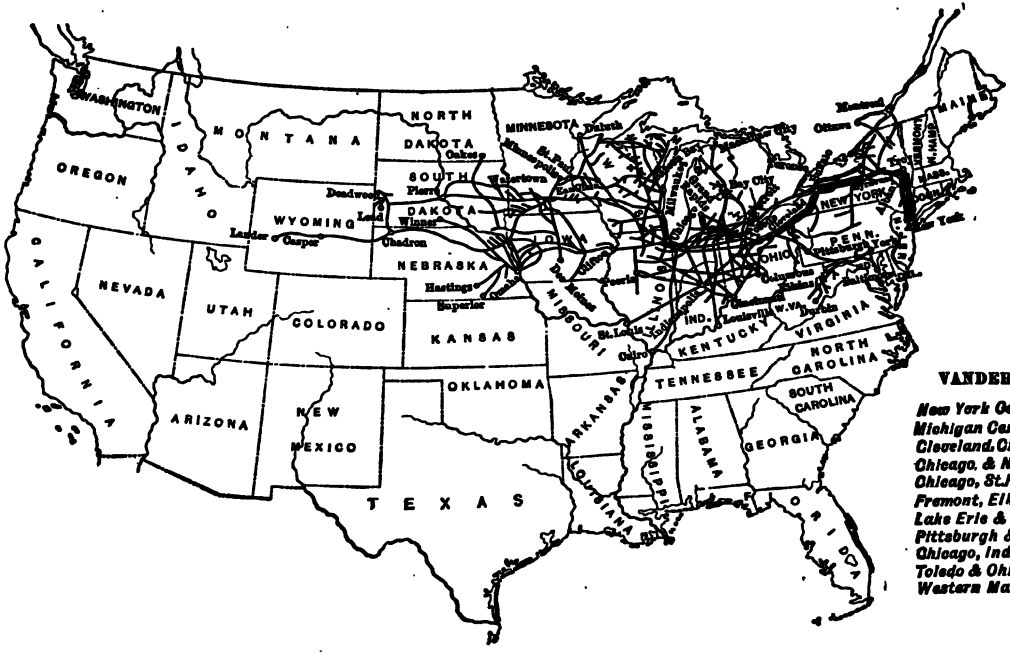
East of Pittsburgh the Pennsylvania Railroad Company operated directly 4,541 miles, of which it owned 2,841 miles, the remainder belonging to a number of subsidiary non-operating companies. In addition some 2,000 miles were operated by subsidiary operating companies, the most important of which were the Long Island Railroad Company, the Philadelphia, Baltimore and Washington Railroad Company, and the West Jersey and Seashore Railroad Company. West of Pittsburgh the Pennsylvania Company, the capital stock of which was owned by the Pennsylvania Railroad Company, operated 1,754 miles of line, all owned by non-operating companies, subsidiaries of the Pennsylvania Company. Of chief importance among these subsidiaries was the Pittsburgh, Fort Wayne and Chicago Railroad Company, owning the main line of the Pennsylvania System between Pittsburgh and Chicago. The Pennsylvania Company also controlled, through stock ownership, several subsidiary operating companies, the two largest being the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad Company and the Grand Rapids and Indiana Railroad Company. The former of these two corporations operated 2,399 miles of line. The Pennsylvania lines are now nearly all operated as one great system.

All the great systems were built up and operated very much as the Pennsylvania System. For a time after the development of the great systems began they were vigorously competitive, not only in services, but in rates as well. Destructive rate wars carried on during the seventies brought many strong roads to bankruptcy. The losses caused by intense competition eventually brought about a second phase of railroad consolidation—the consolidation of competing lines. For a time competing lines endeavored to maintain peace by the use of rate agreements supported by traffic pools and other devices. First, pools, and then all formal rate agreements, were declared illegal. After

this occurred railroad financiers undertook to suppress competition by bringing about the consolidation in one way or another of the dominant railway systems. Pursued at first for the purpose of bringing an end to destructive competition, consolidation was later carried on extensively because of the financial gains to be derived through the distribution and sale of watered securities. Either by merger, the purchase of a controlling interest in rival lines, the formation of holding companies, or by the organization of "communities of interest" and interlocking directorates, great regional combinations were built up. The period of greatest activity in railroad consolidation extended from 1893 to 1903. For a time it seemed that the combination process would be carried to such an extent that there would be a territorial division of the railroads of the United States among a comparatively small number of powerful financial interests.

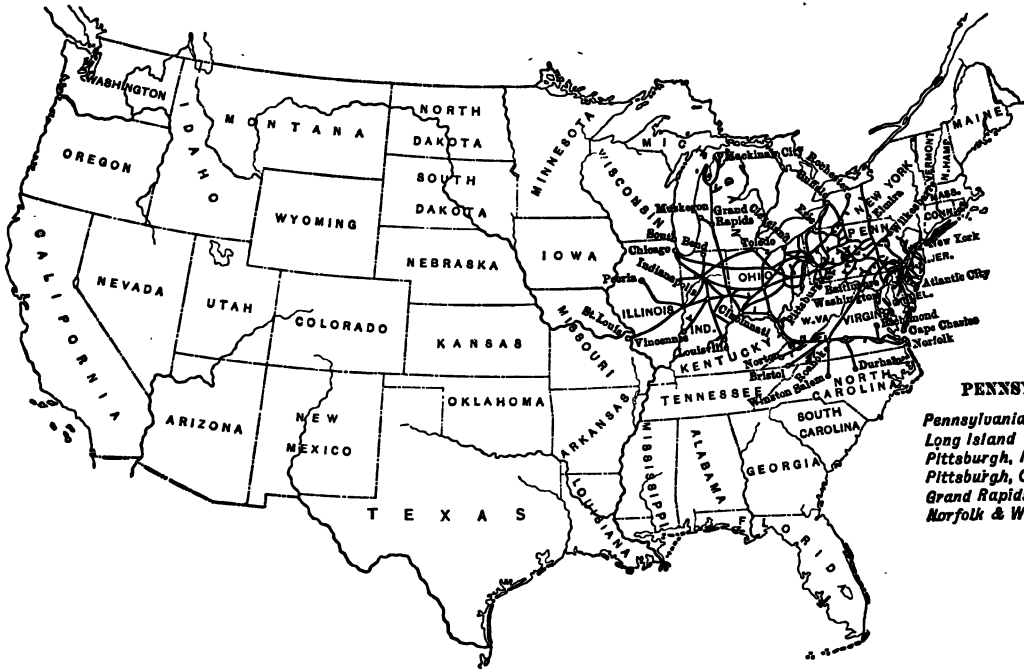
In New England the New York, New Haven and Hartford Railroad, under the direction of the Morgan banking interests, secured control of nearly all the leading transportation agencies, including steam and electric railways and steamship lines. The Pennsylvania Railroad bought substantial blocks of stock in the Chesapeake and Ohio, the Baltimore and Ohio, and the Norfolk and Western. The Baltimore and Ohio invested heavily in the Reading Company, which controlled the Philadelphia and Reading Railroad. The Baltimore and Ohio shared its purchase of Reading stock with the Lake Shore and Michigan Southern, a subsidiary of the New York Central. The New York, New Haven and Hartford was jointly interested with the Pennsylvania and the New York Central in various railroad properties. In this way the most powerful systems of the Eastern territory reached a position which enabled them to exercise a dominating influence.

In the South the Morgan banking interests secured con-



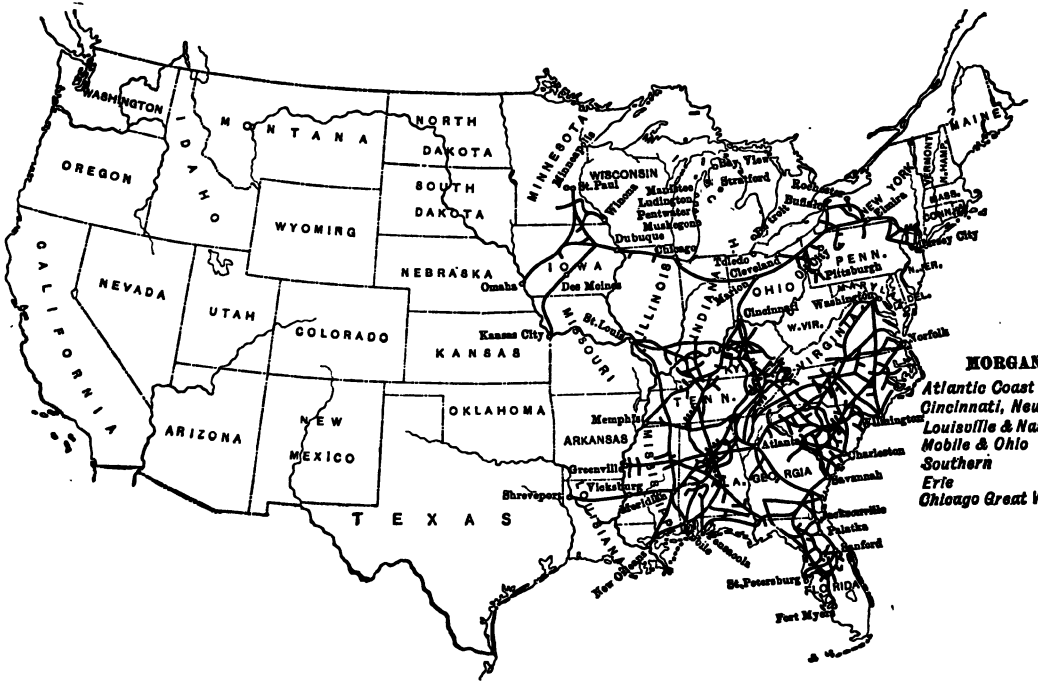
VANDERBILT GROUP

New York Central
Michigan Central
Cleveland, Cincinnati, Chicago & St. Louis
Chicago, & Northwestern
Chicago, St. Paul, Minneapolis & Omaha
Fremont, Elkhorn & Missouri Valley
Lake Erie & Western
Pittsburgh & Lake Erie
Chicago, Indiana & Southern
Toledo & Ohio Central
Western Maryland



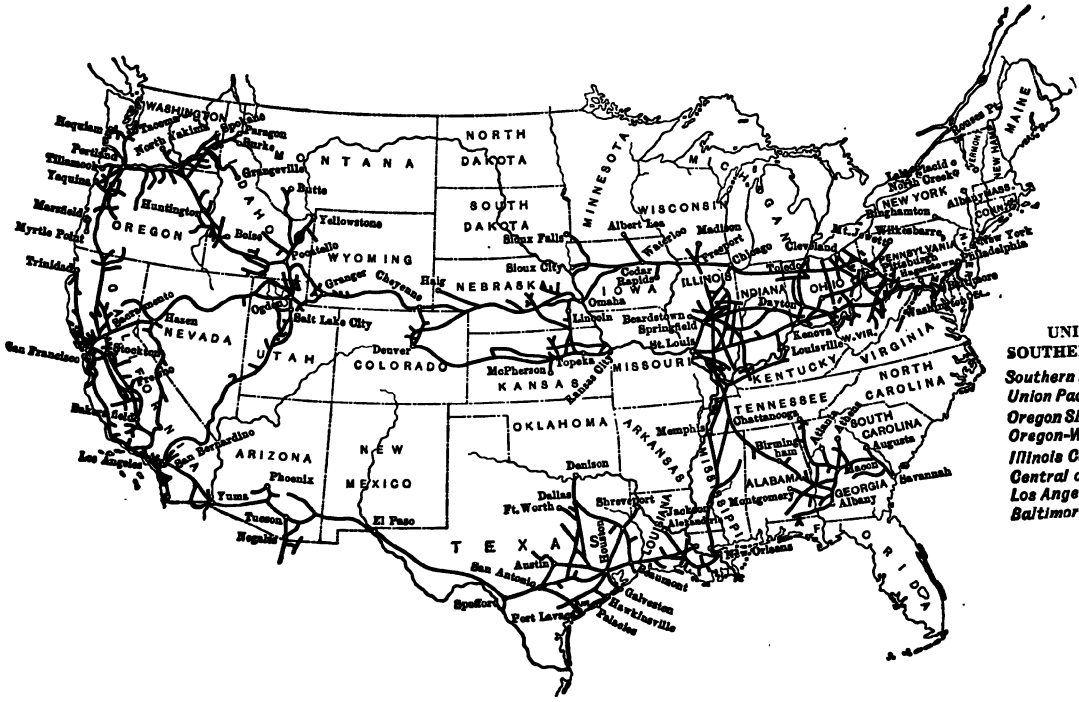
PENNSYLVANIA GROUP

Pennsylvania Railroad
Long Island
Pittsburgh, Fort Wayne & Chicago
Pittsburgh, Cincinnati, Chicago & St.Louis
Grand Rapids & Indiana
Norfolk & Western



MORGAN GROUP

Atlantic Coast Line
Cincinnati, New Orleans & Texas Pacific
Louisville & Nashville
Mobile & Ohio
Southern
Erie
Chicago Great Western



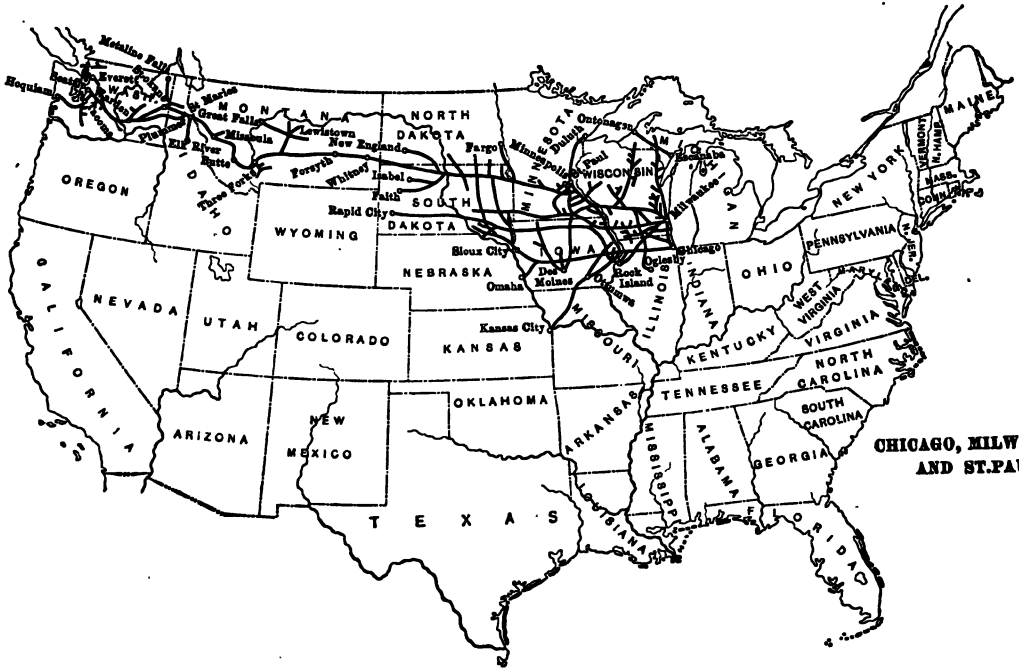
UNION PACIFIC AND SOUTHERN PACIFIC SYSTEMS

Southern Pacific
Union Pacific
Oregon Short Line
Oregon-Washington R.R.& Navigation Co.
Illinois Central
Central of Georgia
Los Angeles & Salt Lake
Baltimore & Ohio System

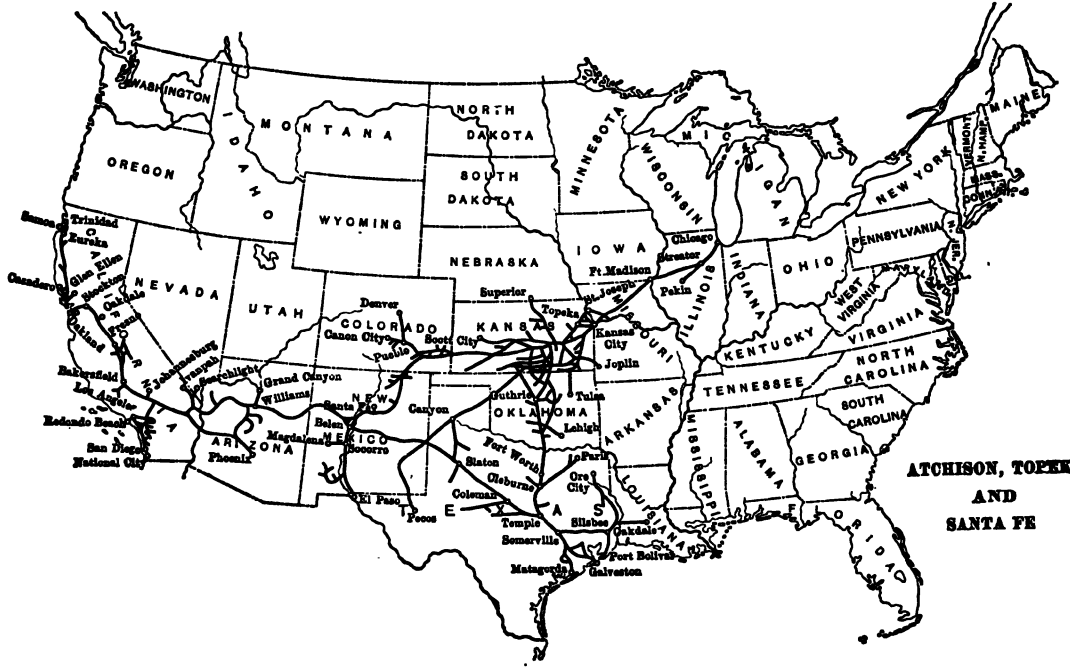


HILL GROUP

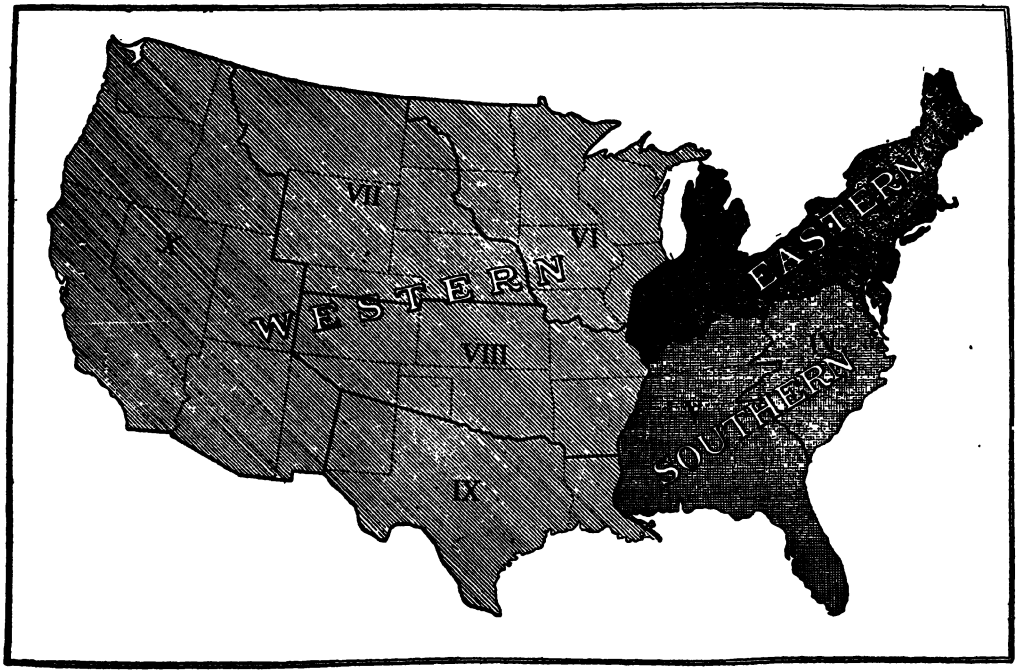
Chicago, Burlington & Quincy
Burlington & Missouri River
Great Northern
Northern Pacific
Colorado & Southern



CHICAGO, MILWAUKEE AND ST.PAUL



ATCHISON, TOPEKA AND SANTA FE



TERRITORIAL DISTRICTS OF THE UNITED STATES ADOPTED BY THE INTERSTATE COMMERCE COMMISSION. ROMAN NUMERALS INDICATE TERRITORIAL DISTRICTS EMPLOYED BY THE COMMISSION BEFORE 1911

trol of the Southern system and the Atlantic Coast Line, the latter controlling in turn the Louisville and Nashville. Joint control of smaller lines by the Atlantic Coast Line and the Seaboard Air Line established a working alliance of these interests. The other railroads of the South were brought into harmonious relations with the Morgan roads, and the important coastwise steamship lines were also brought under railroad control, so that by 1900 the leading transportation interests of the South were fully unified.

West of the Mississippi was the scene of the operations of E. H. Harriman, probably the most astute and skilful of all the great railroad financiers. He built up the powerful Union Pacific-Southern Pacific combination, and for a time was on the verge of securing control of the Northern Pacific and the Chicago, Burlington and Quincy. These two systems, however, together with the Great Northern, eventually came under the control of the James J. Hill interests. The Gould interests built up a system, the most important constituent parts of which were the Wabash, the Missouri Pacific, the Denver and Rio-Grande, the Western Pacific, the Texas and Pacific, and the St. Louis, Iron Mountain and Southern. The Rock Island, the St. Paul and the Santa Fe systems were the other leading railroad systems of the West. Early in the twentieth century the great railroad combinations were subjected to attack under the Sherman Antitrust Law. The Northern Securities Company, a holding corporation, which the Harriman and Hill interests organized in order to pool their interests after their struggle for the control of the Northern Pacific, the Supreme Court declared in 1904 to be an illegal combination. In 1912 the Supreme Court ordered the Union Pacific to dispose of its Southern Pacific stock. The New Haven combination was likewise broken up by the Federal courts. Speculative financial operations and mismanagement resulted in the collapse and disintegration of the Gould

and the Rock Island combinations, many of their constituent roads being forced into bankruptcy.

So unpopular did railroad combination become that eventually Congress enacted legislation designed to break up existing railroad combinations and to prevent any further progress of the movement. The Panama Canal Act of 1912 contained provisions framed to prevent the control of domestic water transportation lines by competing railroad companies. The Clayton Antitrust Act of 1914 specifically forbade a corporation engaged in commerce "to acquire, directly or indirectly, the whole or any part of the stock or other share capital of another corporation engaged also in commerce, when the effect of such acquisition may be to substantially lessen competition between the corporation whose stock is so acquired, and the corporation making the acquisition." Under the influence of adverse legislation and judicial decrees rendered under the Sherman law of 1890, and because of financial difficulties, the large railroad combinations disintegrated. The Eastern roads gradually disposed of many stocks held in competing parallel lines and the process of regional consolidation was brought to an end. The older and stronger "systems" continued, and not all the combinations, consisting of separate operating companies but dominated by the same financial interests, have been dissolved. The Hill system is still intact, and the Morgan banking interests still control most of the roads in Southern Territory. The maps following page 94 show the stronger railway systems of the country.

The process of railroad consolidation is by no means finished. The financial reverses which the railroads suffered during the four years following 1913 and the experiment with government operation during the war caused a decided change of view with respect to the whole problem of railroad regulation. The new features of the railroad policy, embodied in the Transportation Act of 1920, were

based primarily upon the obvious necessity of adopting measures to insure reasonable earnings to all railroad corporations. The problem of securing adequate net income for all roads, without permitting any single road to earn substantially in excess of a fair return, can best be solved, it seems, by bringing about the consolidation of "weak" lines with "strong." The Transportation Act of 1920 provides that the Interstate Commerce Commission may permit any carrier subject to the Interstate Commerce Act to acquire the control of any other such carrier, either by lease or by the purchase of stock, or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation. The law also provides that the Commission shall "prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems." In the division of such railways into such systems under such plan, competition shall be preserved as fully as possible. . . ." As the bill for this Act was originally worded it provided for the compulsory consolidation of the railroads into not less than 20 or more than 35 systems. The compulsory feature of the bill was dropped, but there is yet a strong sentiment that it should be enacted into law and attempts have already been made to have Congress take action to that effect. A number of plans for consolidation have been proposed, one of the most interesting and suggestive of which is that worked out by Mr. John E. Oldham of Boston, who proposed that the roads be divided into 14 great systems, 4 in Eastern territory, 3 in Southern and 7 in Western. The Interstate Commerce Commission has published a tentative plan of consolidation, proposing 19 systems. It is preparing to hold public hearings. The Transportation Act permits voluntary consolidations which are in conformity with the final plan of the Commission.

It is not impossible that Congress will ultimately adopt

a scheme of regional consolidations instead of the plan of having the roads organized into a limited number of competitive systems, though the fact that regional consolidations would tend to eliminate all competition which serves to stimulate efficiency of service tends to weaken the arguments in favor of regional grouping.

Although the United States includes a vast stretch of territory, the country is well supplied with railroad facilities. There are two ways by which the supply of railway facilities is most frequently measured. One of the methods is to ascertain the ratio between the railroad mileage and the number of square miles of territory in the country or in the section being considered—that is, to determine the number of miles of railroad per 100 square miles of territory. Another measure is found in the ratio of mileage to population, or in the number of miles of railroad per 10,000 inhabitants. The number of miles of railroad per 100 square miles is greater in the "trunk line" territory—the section between New England and Chicago and St. Louis—than in any other part of the United States, the number being about 20.4; the New England district comes second, with 12.7 miles per 100 square miles of territory; and the southern district third, with 10.65; after which comes the granger territory, then the southwestern, and finally the western sections served by the transcontinental lines. In the United States as a whole there are 8.5 miles of railroad for each 100 square miles of territory.

Of the individual States, New Jersey ranks first in the railway mileage per 100 square miles, having 30.8 miles for each section of that area; Massachusetts comes second, with a ratio of 26.5; Pennsylvania third, with a ratio of 26; after which come Ohio, Illinois, Indiana, Connecticut, Rhode Island and New York.

The ratio of railroad mileage to population is very different from the ratio between mileage and territory. The

State of Nevada, with only 2,418 miles of road, has 247 miles per 10,000 inhabitants, while the State of Illinois, with over 12,000 miles of railroad, has less than 21 miles per 10,000 people. Massachusetts, with next to the longest mileage per 100 square miles of territory, is so thickly populated that she has only 5.9 miles of railroad for each 10,000 residents. The people of Massachusetts, however, are especially well supplied with railroad facilities. The railroad net is thickly woven and there are no people more than a few miles distant from a well-equipped rail line.

The people living in the eastern half of the United States are more adequately supplied with railroad facilities than are the people of some of the European countries; taking Europe as a whole, there are but 5.63 miles of railroad for each 100 square miles of territory. In Belgium there are 47.9 miles for each such area, in Great Britain and Ireland the number of miles is 19.3, and in Germany about 18.9 per 100 square miles. In European Russia, however, there are only 1.8 miles per 100 square miles, and in Sweden only 5 miles. Western Europe is better supplied territorially with railroads than the United States is even in the eastern part. Eastern and northern Europe, like the western third of the United States, have a relatively small supply of railroads.

Measured by the ratio of railway mileage to population, the supply of railroad facilities enjoyed by the people of the United States is greater than that possessed by Europeans. Taking Europe as a whole, there are only 4.84 miles of railroad for each 10,000 people, which is but a little more than one-sixth of the figure for the United States, where the ratio is 26 to 10,000. In Great Britain and Ireland there are 5.1 miles of railroad per 10,000 inhabitants, in Germany about 6 miles, in France 8.1 miles, and in Switzerland 8.4 miles. By comparing these ratios with those for the States of the United States it will be seen that the

person living in this country is served by a considerably greater length of railroad.

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CHAPTER VII

THE RAILROAD CORPORATION AND ITS CHARTER

The corporation defined, 97. The corporation and partnership distinguished, 98. The railroad company is a quasi-public private corporation, 99. The power of government to regulate railroads, 100. Railroad charters, 102. Size of railway corporations, 104. Insolvent corporations, 106. References, 107.

THE agency by which the railroad machine is managed and the railway system just described is operated is the corporation. The product resulting from the operation of the machine is the transportation service. The executor of the service is the corporation.

Nothing has been more characteristic of the development of industry during the past 50 years than the substitution of the corporation for individual and partnership management of business and the development of the corporations thus substituted into great and powerful organizations. In no other line of activity has the corporation developed in a more typical manner than in the railroad business, and a brief study of the railroad corporation as it exists today will be remunerative not only to the student of railway affairs, but to the student of economic activity in general.

In his book on the *Law of Personal Property,* Theodore Dwight defined a corporation as "an artificial person, created by law, having a continuity of existence, either definite or indefinite, and capacity to do authorized acts, and capable, however numerous the persons that compose it may be, of acting as a single individual." As defined by Elliott in his standard work on *Railway Law,*

a corporation is "a body consisting of one or more persons established by law for certain specific purposes, with the capacity of succession and with special privileges not possessed by individuals, yet acting in many respects as an individual."

As these definitions state, a corporation is a creation of law, by means of which several individuals may act as one person in the performance of certain acts which they are authorized to execute by the law creating the corporation. This "artificial person" called the corporation has a continuity of existence which may be either for a limited and definite period of years or for an indefinite time.

A partnership is a business organization consisting of two or more individuals who contract with each other for the transaction of a certain line of business. The organization thus created terminates with the death of either or any member of the partnership, and the obligations contracted by the firm in carrying on its business become the obligations of each partner. In this respect the partnership differs from the corporation in that the stockholders of the corporation are usually liable only to the amount of their investment or holdings of stock in the organization. In some cases the stockholder in a corporation may be liable to twice the amount of his stock, but that is not usual.

The persons composing the corporation are the stockholders, and in the larger railroad and industrial corporations of today they may number thousands. Inasmuch as it is impossible for a large body of stockholders personally to exercise management of the business of the corporation, it is usual for them to have annual meetings at which a limited number of persons are elected directors. The directors thus chosen usually elect a president, vice president, treasurer, secretary, and various other subordinate officers,

whose business it is to carry on the details of the work under the general supervision and control of the directors. The subordinate officers are responsible to the president; he is under the control of the directors, and they are held responsible to the stockholders, to whom they report at the regular meetings.

Corporations are of two general kinds: private and public. The ordinary manufacturing concern is an example of the former kind, while the city or borough government is an instance of the latter. The railroad corporation partakes of the nature of both kinds. Legally it is to be classed as a private corporation, but the services it performs are of a public nature. The railroad corporation is created to perform a service which in some countries is in the hands of the government, and which the various States and the National Government in this country would need to perform if the railroad corporations were not created by the government to carry on the business of transportation.

The special characteristics of the railroad corporation and the private and public nature of the services it performs are well given by Elliott in the work just referred to. He says:

> A railroad company or corporation is usually regarded as a private corporation, and justly so as contrasted with a strictly public corporation, such as a city, county, township, or the like governmental subdivisions, but it is not a private corporation in the strict sense that an ordinary business corporation is, for it is charged with duties of a public nature that distinguish it from a purely and strictly private corporation. In many respects a railroad corporation is a private corporation in all that the term implies, but in other respects it differs from a corporation upon which no public duties are imposed. . . . The doctrine of Chief Justice Hale, that "when private property is affected with a public interest it ceases to be *juris privati* only," applies to a railroad corporation. It is not to be understood, however, from the fact that the property of a railroad company is devoted to a

public use or "affected with a public interest," that it can be treated as a public corporation; on the contrary, a railroad corporation is classed as a private corporation, and its strictly private rights are as much beyond legislative control as are the rights of a purely private corporation.

The fact that a railroad is a quasi-public corporation is of great consequence, because such corporations may be subjected to very detailed regulation by the state. Being created by the state to perform a service which the state would otherwise be obliged to carry on, the corporation may be compelled by the state to perform the service according to rules prescribed by public authority, whose control may and often does go so far as to fix the rates which the corporation may charge for what it does. It will be found that there are no corporations or individuals engaged in the business of transportation for the public whose charges are not subject to governmental regulation.

The power of positive regulation of the rates and services of transportation companies is vested in the legislative branch of the government. It follows that under our form of government, with a national legislative body and a legislature for each State, railway charges and services are subject to regulation by a number of agencies. However, the powers of the States and of the National Government apply to separate fields. Congress alone, by a provision of the Federal Constitution, has the power to regulate interstate commerce, and the State legislature is limited in the exercise of its rate-making authority to traffic which does not cross the boundaries of the State. Until recently it was thought that the rate-making powers of the State legislatures and of Congress were mutually exclusive, that is, that the States had full power over rates on all intrastate traffic and that Congress had power to regulate rates on interstate traffic only. However, the Supreme Court decided in the

Minnesota Rate case, in 1913, and in the Shreveport, Louisiana, Rate case, in 1914, that Congress has power, when it chooses to exercise it, to overrule any action a State legislature may take as regards rates on intrastate traffic when such action indirectly regulates interstate trade.

In framing the Transportation Act of 1920 Congress undertook to exercise the authority which the Supreme Court declared it to possess. The Act provides that whenever rates or regulations imposed upon railroads by State authority cause any undue or unjust discrimination against interstate or foreign commerce the Interstate Commerce Commission may prescribe rates or regulations which will remove such discrimination, and that the carriers shall observe such rates or regulations "the law of any State or the decision or order of any State authority to the contrary notwithstanding." This law greatly limits the power of the States over railroad charges. The constitutionality of such a sweeping infringement upon State authority has been questioned, but there seems little reason to doubt that the law will be sustained by the Supreme Court.

Though legislatures have the power to make rates, their acts are subject to review in the courts. The right of the courts to review a rate established by a legislative body arises from the fact that the judicial branch of the government in the United States is clothed with the power to determine whether acts of the legislature are in conformity with the written constitutions. The fifth amendment to the Federal Constitution, and all State constitutions provide that no person shall be "deprived of life, liberty or property without due process of law." The word "property" has been construed to include within the scope of its meaning not merely the possession of property, but also the right to enjoy a reasonable compensation for the use of property. Consequently if a rate imposed by legislative enactment is thought by the court to be so low that its enforcement would

result in depriving the carrier of a reasonable compensation for the use of its property, the law establishing such a rate is held to be void. Furthermore rates established by a commission may be overruled by a court not only on the grounds of unconstitutionality, but also on the grounds that the commission has exceeded the authority conferred upon it by the statute in which its powers are specified. A court has no power to make a rate. The exercise of the rate-making power is a legislative function; the court may decide only whether particular rates brought before it in appropriate proceedings have been made in conformity with the statutory and constitutional limitations imposed on the bodies by which the rates were made.

State courts have the power to review the acts of State legislatures and the orders of State commissions affecting intrastate traffic. Federal courts have the power to review not only the acts of Congress and the orders of the Federal commission affecting interstate trade, but also the rates imposed by the State on intrastate traffic. The power of the Federal courts to review rates fixed by state authority is derived from the fourteenth amendment to the Federal Constitution, which declares that no "State" shall "deprive any person of life, liberty or property without due process of law," thus giving a carrier the right to bring an action before a Federal court, either directly or on appeal from a State court, to test the validity of a rate imposed by a State law. Federal courts may also determine whether Congress has acted within its constitutional powers when it interferes with regulations imposed by a State on intrastate commerce; that is, the question of whether certain intrastate commerce is of such a nature that its regulation constitutes a regulation of interstate commerce is a question for judicial determination.

The railroad company derives its powers from a charter granted to it by the state. In the United States most

railroad and other charters are derived from the State governments, but the National Government has the authority to incorporate railroad companies and grant them charters; indeed, in the case of some of the Pacific railroads the charters were derived from the United States. Incorporation may take place either by a special act of the legislature of the State, or in accordance with general laws. Formerly nearly all charters were special acts of the legislature, but that practice led to corruption and favoritism, and most States have enacted general incorporation laws. Indeed the constitutions of many States prohibit the granting of special charters.

The railway charters granted to the companies that constructed the first railroads in this country were very similar to the charters that had previously been granted to the companies that had constructed turnpikes and tollroads; indeed, it was supposed at the beginning of railroad construction that the railroad was merely an improved highway upon which any individual might run his own car. A few years' experience showed that it was not practicable to manage a railroad in that way, and that it was necessary for the business done over the road to be under one centralized management. Railroad charters contained carefully drawn provisions in regard to the tolls that were to be charged individual users of the road. Some effort was made to protect the public interests by stipulating that when the earnings received by the railroad companies should exceed a fixed annual percentage the State might reduce the charges. In general, however, the charters granted in this country afforded very inadequate protection to the public. The experience of the United States in this regard differed from that of European countries, where the state took special pains in granting its charters to provide for the detailed regulation of the service to be performed. In this country the States were so desirous of securing railroads

that very few exactions were imposed upon any company that was willing to undertake a work deemed to be of great benefit to the State and to the general public.

It will be found that this lax and indiscriminate chartering of railway companies was responsible in part for numerous abuses in the railway service. In course of time "the railway question" came to occupy a very prominent place in public discussions, and about 1870 the States undertook in a vigorous way to assume a degree of regulation of the railroads, for which they should have made, but did not make, provision in the charters they had previously granted.

In most foreign countries the railroads are chartered by the central government, but in the United States each one of the States has and exercises the power to incorporate railway companies. If the laws of the several States regarding incorporation were uniform, and if the provisions in the charters were alike or nearly so, this practice would not be disadvantageous; but as a matter of fact the laws and practices are not uniform, some States being much stricter than others. This fact has made the problem of the regulation of transportation by the several States a more difficult one than it otherwise would have been, and is one of the reasons why it is desirable for the United States Government to exercise its power to regulate commerce among the several States.

The railroad companies of today are large and powerful organizations. The Pennsylvania system of railroads, for example, comprises many corporations, but they are practically under one management. The people who manage the Pennsylvania interests have more than $1,000,000,000 under their control, and there are other railway systems in the United States nearly as large as the Pennsylvania. The capital stock of each of the large railway corporations is distributed among a large number of owners. Ac-

cording to statistics collected by the Bureau of Railway Economics at Washington, on December 31, 1917, the stockholders of Class I railroads, which are those having annual operating revenues above $1,000,000, numbered 627,930, of whom 332,624 were stockholders of the railways of the eastern district, 53,226 were stockholders of the railways of the southern district and 242,080 were stockholders of the railways of the western district. Class I railways with their subsidiaries operate approximately 90 per cent of the railway mileage of the United States, handle more than 95 per cent of the traffic and receive more than 95 per cent of the revenues. A medium sized railroad company, such as the Illinois Central, illustrates in an excellent manner the distribution of the ownership among the stockholders. On August 10, 1914, it had 10,872 stockholders, 4,271 of whom owned from 1 to 10 shares, and 4,946 of whom owned from 11 to 100 shares. Fully half of the 1,092,936 shares of stock outstanding were owned in lots of $50,000 or less. On January 1, 1921, the Pennsylvania Railroad Company had outstanding 9,985,314 shares with a par value of $50 a share. They were distributed among 133,068 stockholders, the average holding per stockholder being 75.11 shares. Of the entire number of stockholders 63,639 or 47.82 per cent were women.

The railroad corporations become larger every year, and with the increase in the amount of railroad securities the distribution of ownership is continually widened. Nevertheless the control of railway property is in the hands of a relatively small number of groups of capitalists. Each group of capitalists comprises a multitude of individual owners, the concentration of control being the result of the delegation of authority to the limited number of financial leaders in whom investors have especial confidence. It is not necessary for an individual to own a majority of the stock in a corporation to obtain the practical control. As

the corporations become larger and the stockholders become more widely distributed, control by the individuals or groups of individuals holding a minority of the shares becomes easier.

Most of the money used in the construction of railroads in this country was obtained by borrowing money. The bondholders furnished most of the capital used in railroad construction. When times are good and business active, railroad companies have no difficulty in paying the interest on their debts; but when times are bad and business dull, many corporations in the past have found their income insufficient to meet their current obligations. When a corporation is unable to make the payments it has agreed to make it is called insolvent, and the people to whom the corporation is in debt—that is, the bondholders or those from whom equipment has been purchased—may request a court to take from the officers of the railroad the management of the company until the road again becomes solvent.

When the court thus takes control of a road in the interests of the creditors, it takes the place of the corporation for the time being. If the court finds that the road can be put upon a paying basis, the court will keep the road running until the financial troubles are past. If, however, the court finds the railroad to be hopelessly insolvent it proceeds to sell out the property and to pay over to the creditors the sum received from the sale. On some occasions railroad corporations, foreseeing the approach of financial difficulties, have besought the courts to assume the management of their properties in order that the officials of the corporation might shield themselves from the consequences of their own acts. Such practices, however, are not justifiable, and in time will probably be made impossible by laws regulating the management of insolvent corporations.

REFERENCES

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Those interested in the study of railroad law will find the subject fully covered in the standard treatises by Elliott, Redfield, and others.

CHAPTER VIII

RAILROAD CAPITAL

Stocks and bonds, 108. Classes of bonds, 109. Classes of stocks, 110. Railroad capitalization in the United States, 110. Stock watering, 113. Motives for stock watering, 113. The promoter and the underwriter, 116. Methods of stock watering, 117. Effect of stock watering, 120. Bases of railway capitalization, 121. Public regulation of railroad capitalization, 124. State laws, 125. The Hadley Commission, 127. Federal regulation, 128. References, 130.

THE shares or certificates of stock issued by a corporation represent the investment made by the stockholders who are the owners of the company. The property of the railroad company is usually obligated, however, to people who loan money to the corporation. To persons advancing money in the form of loans extending for a period of one year or more the railroad company as a rule gives bonds or certificates of indebtedness, usually secured by a mortgage, which enable the bondholders to take a certain part or all of the property of the company if it does not pay the interest and principal of the loan according to the terms of the contract contained in the bond. The bonds represent the funded debt of the railroad. A corporation also often obtains temporary advances of labor and material on credit, but these obligations are included within its "current liabilities" which are made up of debts, other than funded debt, which have matured and are payable at once or at the demand of the creditor.

Strictly speaking, the capital of a corporation comprises only the stock that has been issued; but in the case of the

railroads of the United States it is customary to include bonds as well as stocks in the capital. The reason for this is that the issue of bonds has been the means by which a large share, indeed the greater portion, of the funds was secured for the construction of the railroads. The bondholders have frequently created the property against which their mortgages lie. The full amount of the investment can be ascertained only by taking account of both the stock and the bonds or funded debt. The current liabilities of the railroad companies are not now counted a part of the capitalization, although they were so included in the statistics compiled by the United States Interstate Commerce Commission until 1896, when it was decided that only regular investments should be considered as capital.

Various classes of bonds are issued by railroad companies to secure capital. The most common class is the mortgage bond, both the interest and principal of which are secured by a lien on some specific and tangible property. The mortgage may cover rolling stock, terminals, real estate, or the entire physical property of the borrowing company, that is, the creditor may hold equipment bonds, terminal bonds, real estate bonds, or general or "blanket" bonds. Moreover, the payment of these bonds may be secured by a first mortgage or by a second, third or fourth mortgage—the holders of all but the first mortgage bonds being called junior lienors.

Another class of bond frequently issued by a railroad company is the collateral trust bond, which has for its security stocks, bonds or other commercial paper, deposited with a trustee, who is authorized to sell the securities pledged in case the bondholder fails to receive his interest and principal. Debentures represent a claim on the income derived by the borrowing railroad company from specified sources, and they usually rest on no other security than the general credit of the company. In England, railroad bonds are largely of the debenture class, but in the United States

creditors usually prefer the security of a mortgage. Income bonds, which are likewise seldom used in this country, have the principal secured by a mortgage on the property of the issuing company, but the interest is contingent upon the surplus income of the railroad company after superior obligations are discharged.

Whatever the class of bond issued, the claims of the bondholder precede those of the stockholder. No dividend can be declared on stock until the current interest charges have been met and the principal of matured bonds has been paid. Two general classes of stock may be issued by a corporation, common and preferred. Preferred stock has a claim to a given dividend, which must be paid before any income available for the payment of dividends is distributed among the holders of common stock. Some preferred stocks are cumulative, that is, if the stipulated dividend which they command is not paid in full at the proper time, the amount remaining unpaid is carried forward as a prior claim upon all income available for dividends. Holders of common stock are the final claimants of the surplus income of the corporation, and they receive dividends only after all interest charges and dividends on preferred stock are paid.

On December 31, 1918, the total capitalization of the railroads of the United States amounted to $20,784,832,841. Of this amount $19,453,273,003 was actually outstanding, the remainder having been issued only nominally and held by or for the issuing corporations. Stocks made up for $9,055,117,036 of the capitalization, while $11,729,715,805 consisted of funded debt. The railroad companies owned, in their corporate capacity, $2,322,838,352 of stocks and $2,007,655,454 of bonds, leaving as the net capitalization of all the railroads $16,454,339,035.

Between 1900 and 1918 there was an increase of 82 per cent in the total of stocks and bonds of American railroads. The growth of mileage was 33 per cent,

much less than the addition made to capital. Stocks decreased in comparison with bonds. In 1900 stock comprised 51 per cent of the total capital and in 1918, 43.5 per cent. Until 1895 the amount of bonds issued exceeded the stock, but, because of the business depression at that time, many roads had become insolvent and found it necessary to reduce their fixed charges by substituting stock for bonds.

It seemed probable that railroad companies would thereafter make use of stocks more than bonds to secure additional funds, because a strong road having an assured traffic can find a ready market for its stocks. Since 1900, however, bonds have been substituted for stocks in the purchase of one road by another, and this is probably a permanent tendency resulting from the process of consolidation and extension. A marked feature of the financial policy of many large American railway systems is the issue of a huge quantity of "blanket" bonds, for the purpose of retiring previous issues and in order to secure money for improvements.

The capitalization per mile of railroad in the United States in 1918 averaged $66,893. In obtaining this average the railway stocks and bonds held by the railroads themselves are not considered, only the amount of securities actually outstanding "in the possession of the public" being taken as the basis of calculation. There are great differences in the various roads as regards the amount of capital per mile of line, some roads having only $10,000 of capital per mile, while others have from $300,000 to $500,000 per mile.

A single-track road across a level section of a new portion of the country, where the right of way and terminal facilities can be secured at a nominal expense, may be constructed for a small fraction of what it costs to build lines over mountains or between large cities in populous regions,

like the eastern United States or western Europe, where real estate values are high.

Cost, however, is only one of the causes accounting for differences in capitalization. Variations in capitalization among different companies arise from the fact that some systems, like the Pennsylvania, Illinois Central, and others similarly managed, have issued stocks and bonds in a conservative rather than a speculative spirit; whereas, some companies, notably those owning most of the Pacific roads, formerly pursued a policy of capitalizing their properties as largely as possible.

The average capitalization of the railroads of the United Kingdom is about $278,000 per mile or more than four times the average for the United States. In England and Wales the capitalization per mile of line in 1911 was $328,415. The great difference between the capitalization of British railroads and the railroads of the United States is due to several causes. The British companies had larger expenses for right of way and terminals, and they built their roads more solidly than was customary in the United States. The British companies, unlike most of those in America, charge practically all improvements to capital and not to revenue. Some American companies expend more of their earnings for betterments and new construction than they distribute in dividends.

The capital of American railroads is increasing, partly from the fact that new lines are being constructed, but more because existing roads are becoming of greater value with the progress of the country and the growing volume of rail traffic. To some extent this enhancing value of railroad property is being capitalized by the issue of new securities. During the year 1900, for instance, when there was a very large increase in capital, amounting to $457,000,000, there was probably not over $120,000,000 used in building the 4,051 miles of new roads; the remaining $337,000,000 rep-

resented a higher capitalization of roads previously constructed. The recent increase in capital, however, does not equal the total growth in the value of railroad property. Many stocks formerly issued have become more valuable during the past few years.

In the case of many American railroads built after 1850, particularly in the Western and Southern States, the stock represented very little investment. Most of the money used in construction was secured by the sale of bonds, the stock being sold cheaply or given as a bonus to the purchasers of bonds. The stock thus cheaply secured gave investors the possibility of large gains through an increase in the value of the stocks, should the railroad develop a large traffic. When stock is issued which does not represent a corresponding increase in the assets of the issuing corporation it is called "watered stock," the amount of water at the time of the issue being the difference between the par value (or the market value, if the stock commands a price above par) and the assets actually received for the stock. The stock of many American railroads has been largely watered. One evidence of this is the fact that in the highly prosperous year of 1900 less than one-half of the railroad stock of this country received any dividend and in 1918 only 58.09 per cent received dividends. In 1897 only 29.9 per cent of the stock received dividends. In only three years since 1887 have two-thirds or more of the railroad stocks of the United States yielded dividends to their owners.

Some stocks on which no dividends are received may have a selling value for speculative purposes, and others from which no income is now obtained may represent a real, although unfortunate, investment; but in general, non-dividend stocks stand for water instead of real investment. Moreover, many stocks receive small dividends and are quoted on the market much below par. They also consist

largely of water. It is thus evident that American railroad stocks as a whole have a par value greater than the real capital received by the companies issuing the stocks. This is not true of some railroad companies which have closely restricted the issue of stocks and have sold them at, near, or above par. Nor is it equally true of all sections of the United States, there being less fictitious value in the stock of the eastern railroads than in those of other sections of the country.

These statements are corroborated by an investigation that was made by the Interstate Commerce Commission. In February, 1901, the United States Senate called upon the Interstate Commerce Commission for a statement comparing the par and market values of all classes of railroad securities during the year ending June 30, 1900. The report, made by the commission February 24, 1903, indicated that the $10,911,968,970 of securities (par value), whose market value could be ascertained, had a total average market value in 1900 of $8,351,103,523; but the commission was careful to point out that the figures were only approximately correct. There were securities with a par value of $812,066,859 whose selling value could not be ascertained. Moreover, the commission called attention to the fact that the prices paid for the securities bought and sold could not safely be accepted as the measure of the value of the securities not on the market; and also that the values of the securities listed on the stock markets were not necessarily "a just measure for the valuation of the property." However, in spite of the recognized limitations of the facts presented in the commission's report, the data there presented indicate that there was in 1900 a considerable difference between the market and par value of railroad securities. Market values, of course, depend mainly upon the income obtained from securities; but if stocks and bonds had uniformly been sold at or near par at the time of their issue, the comparison

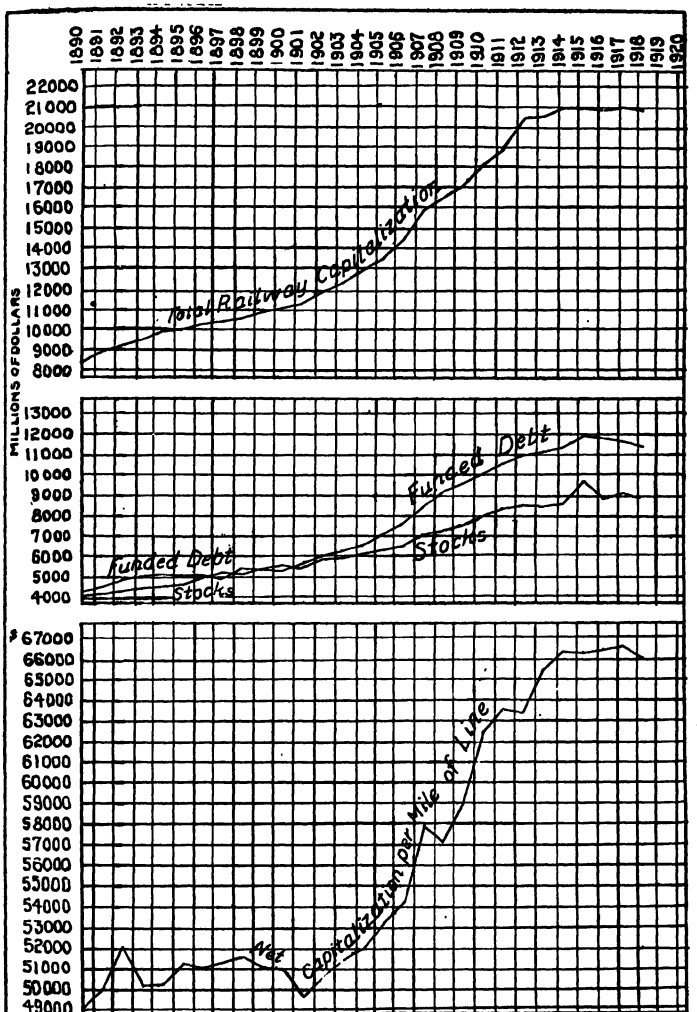


DIAGRAM OF RAILROAD CAPITALIZATION AND DIVIDENDS, — 1890-1918

of par and market values in 1900 would most likely have shown the market values to have been greater than the par values.

In addition to the motive for stock watering cited above —the distribution of stock among bond purchasers gratis or at a low price—there are three other incentives to the issue of large amounts of stock. In financing corporations it has been found that greater profits can be secured from the sale of large amounts of stocks and bonds at a low figure than from the sale of small issues at a high price. Investors prefer securities affording opportunities for speculative gains. Ten million dollars of 3 per cent bonds will sell for more than $6,000,000 of 5 per cent bonds, although the income at the beginning would be the same from each investment. Another motive for stock watering is the desire to capitalize the future growth in the earnings and value of the property; the large volume of stock is not issued by the company for immediate sale, but to be held by the individuals composing the company in order that they may have an ample basis for the distribution of future profits which they anticipate will be large. This plan of large capitalization also enables the company to conceal from the general public the real amount of its profits. Large profits are secured from low rates of dividends and from securities having a low valuation, and this is advantageous from the investor's standpoint in a business such as railroad transportation, where the charges for services are subject to public regulation.

The men who "promote" and underwrite new corporations or the consolidation of competing companies have derived special gains from the device of stock watering. The business of the promoter is to organize a corporation or a combination of corporations and to induce those affected to agree to the conditions of organization. If several companies are to be united, the promoter first secures from each

company an option for purchase at a fixed sum; and then he fixes the capital of the new consolidated corporation at a sum much in excess—usually about double—the total capital of the constituent concerns. The several companies are paid in cash or with preferred stock, and more or less common stock is usually thrown in as a bonus. A large share of the common stock is retained by the promoter to remunerate him for his services, and the profits he realizes from his undertaking come chiefly from the sale of this watered stock.

To insure the sale of securities a corporation usually negotiates with a banking house or a syndicate of bankers to act as underwriters. The bankers agree to sell a certain amount of stocks or bonds at a minimum price, or failing to do so, to take the securities not disposed of. To the promoter of a new company the services of the underwriter are of great importance; and the directors of established corporations often prefer to insure the sale of a block of new securities at a certain minimum rate, rather than risk the hazards of the open market. The underwriter receives large pay, in the form of cash or securities, and furthermore he is often able to realize a profit from the sale of the stocks or bonds which he guarantees. In many instances the promoter of a new company and the underwriter are the same individual or business organization.

The methods by which stock watering may be accomplished are numerous. A generation ago, when the standards of railroad financiering were lower than they now are, the securities of a railroad were sometimes increased at the will of speculators for the purpose of manipulating the market. The history of the Erie Railroad and other transportation corporations, when in the hands of speculators and unscrupulous operators, affords conspicuous examples of fraudulent practices.[1]

[1] See Charles Francis Adams, *Chapters of Erie.*

Another fraudulent method of dealing with stocks and bonds, much in vogue between 1860 and 1880, consisted of awarding large amounts of securities to construction companies which were composed of officials of the railroad corporation. One of the most noted construction companies of this kind, though only one of many, was the Crédit Mobilier, to which the contracts for building the Union Pacific Railroad were let.[1] This method of defrauding the stockholders not in the ring of interested officials has a parallel in the exorbitant payment of securities to the syndicate of bankers that finances the enterprise of constructing a new road or assumes the task of reorganizing an insolvent company. According to the report of the Industrial Commission, "the original Southern Pacific cost actually only $6,500,000; although it is a matter of record that $15,000,000 was paid to a construction company, and the bankers' syndicate, which financed the road, received $40,000,000 in securities, or an average of $6 in bonds and stock for each dollar of actual cost."

These methods of stock watering are not characteristic of railroad construction and financiering today, but they have not been entirely eliminated. Stock watering is accomplished at the present time in a variety of ways. One method is to distribute a new issue of stocks among the stockholders either as a bonus or to sell it to them below par or for less than the price which could be obtained in the open market. A railroad is sometimes in the fortunate position of having a revenue sufficient to pay large dividends and to add largely to the undistributed surplus. By increasing the stock the rate of profits or dividends can be kept at a lower figure, and any unneeded surplus reserve can be turned over to the stockholders.

Railroad companies having an undesirably small revenue

[1] See histories of the Union Pacific by Davis and by White; also *The Crédit Mobilier* by Crawford.

sometimes add to their funded debts, and thus to their capitalization, by converting current liabilities, such as bills payable, wages and salaries due, into interest-bearing scrip. This kind of financiering is a temptation to which companies are apt to yield during protracted periods of business depression, but it violates the principle that current expenses should be paid from current earnings.

The retirement of bonds by the issue of stock much in excess of the amount of the bonds canceled is resorted to by some companies. This is done for two reasons. By reducing the funded debt, the fixed charges are lessened, and the difficulties of weathering financial depressions are made lighter. Similarly the large volume of stock is useful in times of prosperity, because it affords an ample basis for the distribution of large profits in dividends at a low rate per cent on the capitalization. In the reorganization of insolvent companies, the fixed charges are frequently reduced by the substitution of stocks for bonds.

The consolidation of railroad companies is frequently accompanied by a large increase in capitalization. This has been notably the case with the consolidations that have taken place since 1898, and has been even more characteristic of the mergers of street railways than of trunk-line railroads. In making the purchase of the Chicago, Burlington and Quincy by the Great Northern and Northern Pacific interests, and in the transfer of the Lake Shore to the New York Central, the stocks of the selling companies were exchanged for bonds of the purchasers, $2 of bonds being given for each dollar of stock. The Northern Securities Company, organized in 1901 to hold the securities of the Great Northern, Northern Pacific, and Burlington systems, exchanged $180 of its stock for $100 of Great Northern stock and $115 of its stock for $100 of Northern Pacific stock. Competing railroads are consolidated for the purpose of stopping the expenses due to competition, and to

introduce a more economical administration of the properties. These anticipated savings are usually capitalized in advance by the issue of additional securities.

There are differences of opinion as to whether the watering of stock should be practiced by railroad companies or permitted by the Government. There is little doubt that the practice gives greater scope for speculation, some forms of which are decidedly objectionable. The company with a large capitalization and a consequently low rate of dividends has a plausible reason for opposing the payment of higher wages to its employees and for objecting to a reduction of the rates and fares charged the public. The actual relation of capitalization to railway charges is difficult to determine, and the discussions of the subject show a difference of views among students of transportation, but there is no doubt that a railroad company whose rate of dividends is small is less liable to have its charges reduced by public authority than it would be if its regular dividends showed a high rate of profits. The excessive watering of stock is certainly opposed to conservative railroad financiering. The best managed companies have carefully limited the amount of their securities, both bonds and stocks. The promoter and speculator find their opportunity in the practice of watering stock, but the general investor and the responsible managers of railroad properties are safer under a policy of restricted capitalization.

A partial excuse for the excesses of the past may be found in the fact that many of the early railroads, especially in the West, were extremely hazardous enterprises, and it was only by appealing to the speculative interests of individuals that capital could be secured at all for their construction. Furthermore it must be said that in many cases the "water" injected into railway securities a few decades ago has been absorbed by the application of large portions of the railway revenues to the improvement of the proper-

ties, instead of to the payment of dividends, until the value of the railroad now approaches more nearly the par value of the stocks and bonds which they represent. But whatever methods of capitalization past conditions may have justified, under present conditions reckless speculation with railway property and gross overcapitalization should no longer be tolerated.

The manner and extent to which railroad capital should be limited by public regulation may be understood better after considering the basis which should be accepted in determining whether a railroad is or is not overcapitalized. Different views obtain as to the proper basis for capitalizing a railroad. Some persons claim that the original cost of the property and the money actually invested at the beginning and subsequently should determine the amount of capital issued. Others hold that the earnings of a railroad afford the true measure of the volume of capital that may safely be adopted, while some persons consider the true basis of capitalization at any given time to be the cost of reproducing the railroad—the sum it would require to obtain the right of way, construct the line, and acquire the terminals.

The most natural supposition is that railroad capital should represent the cost of the property, the money actually invested, that stocks and bonds should be issued only for money paid in, and that their par value should approach as closely as practicable their actual value at the time of issue. This theory is not altogether satisfactory, however, because some roads have cost more than they ought on account of inefficient or fraudulent management, or because they were constructed at a time when labor was scarce, materials expensive, and interest rates high. Under such conditions cost gives a capitalization higher than would be just to the public at the present time. Likewise, some roads have been very economically built, and have been managed with such ability and honesty as to have had their

value greatly increased. Business ability should have its rewards, and a rule regarding capitalization which would not give men the results of their efforts would be neither just to them nor in harmony with the best interests of the public.

The basis for capitalization preferred by the men interested in railroad management is the earning capacity of the property. The selling value of the railroad is determined by its earnings, and that its selling value, present and probable, may justly be fully capitalized is the contention of those who accept this theory. This plan of capitalization enables a railroad company to obtain money from investors more readily, since many persons prefer to buy securities at a discount because of the chance of securing profits from the advance in the price of the securities with the growth of the earnings of the railroad. There are certain objections to this theory of capitalization, one being that the excessive capital conceals real profits, and makes it difficult for the men who serve the company or the public served by the corporation to determine whether the men who own the property are receiving more or less than a just return on their investment, whether the company, the employees, and the public are sharing equitably in the benefits. To permit a railroad company to secure the greatest possible earnings from the public, and to cover up the relation of profits to actual investment by issuing stocks or bonds without limitation, is not in accord with present views as to the public obligations of carriers.

Does cost of reproduction or duplication afford a satisfactory and fair basis for capitalization? This theory has been accepted by some of the State railroad commissions, and has been followed by several courts. The Interstate Commerce Commission, however, and the United States Supreme Court have not adopted this rule. In order to determine what rates a railroad company may reasonably charge, the courts and commissions are obliged to decide

how much capital is justly entitled to receive profits from the company's earnings—i. e., they are compelled to determine the actual and just value of the property; for it may be assumed that its owners may properly issue capital to the amount of a just valuation of the railroad. The amount of money invested in the property does not reveal the true present value for reasons already stated. The earning capacity of the railroad can not equitably or logically be made the sole criterion of value, because the rates, and hence the earnings, should depend to some extent at least upon the amount of capital justly entitled to profits.

The solution of this difficult question seems to be found by taking into consideration both the cost of reproduction and the earning capacity in determining the basis of capitalization, and this method has been followed in a general way by numerous courts and commissions. Definite rules for applying this method as a basis for taxation were worked out by a State Tax Commission, in Michigan, in 1900. In determining the value of the physical properties of the railroad—its roadbed, rolling stock, terminals, etc.—the cost of duplication was made the basis of valuation. The railroad company's franchise, the special concessions granted to it by public authority, and the special commercial opportunities upon which its business depended —that is to say, all the non-physical or immaterial elements of its property—were valued in accordance with their earning capacity. To ascertain the value to be attributed to these non-physical properties, a method suggested by Professor Henry C. Adams was followed. According to the method devised by Professor Adams, the value of these immaterial properties

was determined (1) by deducting aggregate expenses of operation from gross earnings and adding the income from corporate investments; (2) by deducting from the total income thus

obtained an amount properly chargeable to capital—that is, a certain per cent on the appraised value of the physical properties—rents paid for the lease of property operated, amount paid for taxes and the sum spent on permanent improvements charged directly to income; (3) by capitalizing the remainder at a certain rate of interest.[1]

A method of valuation similar to this, in which both the value of the physical equipment of a railroad and the advantages resulting from efficient operation and economical management would receive consideration, would offer a basis for capitalization equitable to all parties of interest—the public, the investor, and the railroad company.

The excessive capitalization of their properties by many railroad companies for the purpose of securing the greatest possible amount of money from the investing public, and the speculative—sometimes fraudulent—manipulation of railroad securities, have probably made the cost of securing transportation services greater than it need have been, and have made railroad bonds and stocks a much less reliable form of investment than they might have been. For many years there was an urgent demand that the capitalization of railroad corporations be subjected to public control. In many States laws were enacted providing for the regulation of the issuance of railroad securities.

Massachusetts was a pioneer in the enactment of legislation for the regulation of the issuance of stocks and bonds by railroad companies and other public utility corporations. The laws passed by this State forbade the distribution of stock as a bonus to the purchasers of bonds, and other common forms of stock watering were likewise prohibited. The Public Service Commission law of Massachusetts provided that before a railroad corporation might issue securities it should apply to the Commission for an order approv-

[1] *Report of Industrial Commission*, XIX, 412.

ing the proposed issue. It was required that the application state the purpose for which the securities were intended; the Commission was authorized to determine the amount reasonably necessary for the purpose indicated in the application, and was also authorized to order the proceeds of the sale of the securities to be applied to particular uses. Shares of stock could not be sold or issued for a less amount than par value, actually paid in cash. New shares of stock might be offered proportionately to stockholders at a price, not less than par, to be fixed by the stockholders themselves, subject to the approval of the Commission. If the Commission thought that the price named by the stockholders for any issue of stock was "so low as to be inconsistent with public interest" it could refuse its approval of the issue. The law thus served to prevent the emission of stock at a price so much below market value as to bring about stock watering, but at the same time permitted the corporations and their shareholders to participate to a certain extent in any premium which efficient and economical management might cause the stock to command. Railroad corporations were forbidden to issue bonds, notes, and other evidences of indebtedness in excess of twice the amount of capital stock actually paid in.

Many other States followed the example of Massachusetts in regulating the capitalization of railroads and other public utilities. While these State laws unquestionably did much to check excessive capitalization of railroads, it was clearly perceived that State legislation could not bring capitalization under complete control. Many States passed no regulatory laws whatever, and the practices of those States which did take action were by no means uniform. The lines of nearly all the larger railroad companies are located in several States, and it was easy for the corporate officials to carry out plans of unwise financing in the States where the laws were least stringent and effective. For example, the

operations which led to the disastrous financial collapse of the New Haven railroad were carried out regardless of the excellent laws of Massachusetts, in which much of the New Haven property was located. Moreover, even when a sufficient number of States had enacted legislation to subject a railroad system to complete regulation many difficulties of administration arose. The State regulatory bodies did little to cooperate with one another, and it was frequently necessary for the corporate officials of railroads to secure the consent and approval of a half-dozen or more State Commissions before they could issue needed stocks and bonds. It became increasingly apparent that the regulation of railroad capitalization should be centralized under a single authority. The public at large desired such centralization because of the lack of effective legislation by all the States. The managers of the railroad corporations desired it because of the difficulties they met with in conforming to the orders of so many different State authorities. The obvious solution of the problem was the regulation by the Federal Government of the capitalization of all railroads engaged in interstate commerce.

At the time of the enactment of the Hepburn Amendment to the Interstate Commerce Law in June, 1906, it was suggested that the Interstate Commerce Commission should be given authority to control railroad capitalization, but some question as to the practicability of the execution of a law to this effect prevented its adoption. In 1910, at the time of the passage of the Mann-Elkins Act, the question of the regulation of the issue of stocks and bonds by the Interstate Commerce Commission was once more revived. Again no regulative measure was passed, but a clause of the Mann-Elkins law authorized the President of the United States to appoint a Railroad Securities Commission to investigate the entire subject of railroad capitalization and its regulation. This commission, at the head

of which was Professor A. T. Hadley, President of Yale University, rendered its report in 1911.

The Hadley Commission, as it was popularly known, argued that there was little relation between capitalization and rates, and that regulation limiting the price of securities and the amount which might be issued could be of but little benefit. However, as a measure of protection for the public it recommended that the Federal Government should make a physical valuation of all the railway property of the country and should require the fullest publicity of all the financial transactions of the railroad companies. The first of these recommendations was enacted into law in 1913, and under the direction of the Interstate Commerce Commission a valuation of the physical properties of the railroads of the United States is now being made. The Hadley Commission advised that the Government refrain from other means of regulation of security issues, partly because of their needlessness, but chiefly because of the certainty of conflict between Federal and State authority. An interesting, and according to most students of finance, an unwise recommendation of the commission was that a stated par value be omitted from shares of capital stock.

Notwithstanding the adverse report of the Hadley Commission on the question of regulation by the Federal Government of the issue of railroad stocks and bonds the agitation for Federal control continued. The persistence of reckless methods of railroad finance and of improper manipulation of securities by unscrupulous directors constituted an argument for Federal action too strong to be withstood. In June, 1914, a bill giving to the Interstate Commerce Commission powers with respect to the issue of securities by railroads engaged in interstate commerce similar to the powers possessed by the stronger State commissions was passed by the House of Representatives, but it did not reach

a final vote in the Senate. Action on the subject was thereafter delayed until the passage of the Transportation Act of 1920. This law brought the regulation of railroad capitalization under the control of the Interstate Commerce Commission.

Under the provisions of Section 20a of the Interstate Commerce Law, as that law now stands since amended by the Transportation Act of 1920, a railroad corporation subject to the terms of the act may not issue any share of capital stock or any bond or other evidence of indebtedness except with the consent of the Interstate Commerce Commission. A carrier contemplating an issue of securities must first make application to the Commission in such form as the Commission may prescribe. Upon receipt of the application the Commission is required to give notice thereof to the governor of each State in which the applicant carrier operates. The regulatory authorities of the State have the right to make before the Commission such representations with respect to the application as they think proper. The Commission may hold hearings, if it chooses to do so, to enable it to determine what its decision on the application should be. It may grant or deny the application or it may grant it with modifications and upon such terms and conditions as it deems appropriate. The jurisdiction of the Commission is "exclusive and plenary, and a carrier may issue securities and assume obligations or liabilities" without securing the approval of other authorities. The only securities which the carrier may issue without the Commission's express consent are short-term notes of a maturity of two years or less, and of such notes the amount issued without specific authorization must not exceed 5 per cent of the par value of the outstanding securities of the carrier.

There is some question concerning the extent of the jurisdiction over security issues given to the Interstate

Commerce Commission by the Transportation Act. There seems little doubt that the law gives the Commission ample powers of a restrictive character. That is, it may forbid the issuance of securities which under existing State laws or regulations might be legally issued. But it is questionable whether the Commission may permit the issue of securities forbidden by the law of the State in which a railroad holds a charter or forbidden by the terms of the charter itself. For instance, suppose the law of a State in which a certain railroad is incorporated forbids the issue of a stock dividend. Does the Commission have the authority to permit that railroad to issue a stock dividend? If the Commission possesses only restrictive powers the only way in which it may obtain complete discretionary powers over capitalization would be through the enactment of legislation compelling the Federal incorporation of all railroads engaged in interstate commerce. It is not unlikely that legislation of this character will in time be passed.

A further limitation upon the issue of securities by railroad corporations is provided in that part of the Transportation Act dealing with the consolidation of railroads. The law stipulates that when two or more carriers shall consolidate their properties into one corporation, the bonds at par together with the outstanding capital stock at par of the new corporation shall not exceed the value of the consolidated properties as determined by the Commission. Should a law eventually be enacted to compel the consolidation of the railroads into a limited number of great systems, the capitalization of the systems will doubtless be based directly upon the valuation of the properties. A capitalization of railroads to correspond with their actual value, as determined by an impartial tribunal, would unquestionably be of much public benefit. The problem of rate regulation would be simplified, and there would be fewer opportunities for unscrupulous speculators to indulge in fraudulent practices.

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CHAPTER IX

EARNINGS, EXPENSES AND DIVIDENDS

Sources of revenue, 131. Operating revenues, 131. Non-operating income, 133. Operating expenses, 134. Fixed charges and other expenditures, 135. Net income and dividends, 135. The operating ratio, 138. Relation of earnings and dividends to business conditions, 141. References, 144.

THE revenues obtained by the railroad companies are derived mainly from the freight and passenger services. The payments received from the transportation of mail and express matter are of considerable amounts, but as the mail and express cars are always attached to passenger trains, the receipts which the railroads obtain from the Government and the express companies for running these cars are credited to passenger train revenue. In connection with both the freight and passenger services there are earnings not derived from the operation of trains, such as the receipts for the rental of cars and terminal facilities of various kinds. Moreover, some railroad corporations lease their tracks to other companies and own the stocks or bonds of other companies—both railroad and industrial—and the rentals and the interest or dividends on these investments constitute sources of income.

A general grouping of railroad revenues may be made into (1) those derived from the operation of trains and other facilities, and (2) those obtained from interest on loans and investments and rentals. In the accounts and reports of railroad companies each of these groups is divided into several classes and subclasses.

Analysis of operating revenues of Class I operating railroads for the years ending December 31, 1917 and 1916

Account	1917 Amount	1917 Per cent of total revenue	1916 Amount	1916 Per cent of total revenue
Freight	$2,819,965,215	70.25	$2,560,988,111	71.20
Passenger	825,211,593	20.56	706,608,630	19.64
Excess baggage	6,234,382	.15	6,064,369	.17
Sleeping car	2,848,710	.07	2,895,797	.08
Parlor and chair car	1,508,627	.04	1,365,037	.04
Mail	58,775,765	1.46	61,195,800	1.70
Express	106,914,603	2.66	90,155,445	2.51
Other passenger train	7,120,499	.18	5,913,622	.16
Milk	16,750,174	.42	16,115,884	.45
Switching	41,421,149	1.03	39,419,827	1.10
Special service train	1,877,034	.05	1,688,198	.05
Other freight train	386,128	.01	273,619	.01
Water transfers—freight	863,881	.02	652,790	.02
Water transfers—passenger	1,762,927	.04	1,684,367	.05
Water transfers—vehicles and live stock	2,673,250	.07	2,325,202	.06
Water transfers—other	1,445,215	.04	1,221,751	.03
Total rail-line transportation revenue	$3,895,768,152	97.05	$3,498,568,430	97.27
Freight	$12,958,610	.32	$14,222,511	.40
Passenger	1,454,722	.04	1,435,403	.04
Excess baggage	3,602	....	4,524	....
Other passenger service	38,802	....	56,559	....
Mail	20,958	....	27,871	....
Express	37,680	....	20,753	....
Special service	225	....	1,930	....
Other	444,371	.01	330,650	.01
Total water-line transportation revenue	$14,968,060	.37	$16,100,201	.45
Dining and buffet	$21,720,059	.54	$17,466,682	.48
Hotel and restaurant	8,915,269	.22	6,448,258	.18
Station, train and boat privileges	4,488,763	.11	3,897,093	.11
Parcel room	1,208,543	.03	1,050,812	.03
Storage—freight	5,682,785	.14	3,524,463	.10
Storage—baggage	750,413	.02	669,082	.02
Demurrage	26,401,148	.66	18,372,713	.51
Telegraph and telephone	2,108,673	.05	1,885,119	.05
Grain elevator	1,948,123	.05	2,231,200	.06
Stockyard	1,994,915	.05	1,491,392	.04
Power	2,762,482	.07	2,184,040	.06
Rents of buildings and other property	4,934,022	.12	4,464,872	.12
Miscellaneous	17,719,503	.45	16,077,259	.45
Total incidental operating revenue	$100,583,698	2.51	$79,762,985	2.21
Joint facility—Cr	4,381,795	.11	3,830,343	.11
Joint facility—Dr	1,558,957	.04	1,396,202	.04
Total joint facility operating revenue	$2,822,838	.07	$2,434,141	.07
Total railway operating revenues	$4,014,142,748	100.00	$3,596,865,766	100.00

The *operating revenues* are derived from several sources, the most important being the transportation of freight and passengers. An analysis of the revenues from rail operations of operating railroad corporations as given in the annual statistical report published by the Interstate Commerce Commission, is shown in the preceding table.[1] It will be observed that nearly seven-tenths of the revenue is obtained directly from the freight business, while less than one-fourth comes from the transportation of passengers, and only one twenty-fifth from the mail and express revenues.

Non-operating income of Class I operating railroads for the years ending December 31, 1917, and 1916

	1917	1916
Hire of freight cars - credit balance	$33,349,542	$20,964,852
Rent from locomotives	7,999,916	7,540,673
Rent from passenger-train cars	12,016,887	11,256,786
Rent from floating equipment	3,493,543	200,837
Rent from work equipment	1,946,167	2,100,142
Joint facility rent income	24,827,433	24,211,969
Income from lease of road	4,172,339	4,382,393
Miscellaneous rent income	8,957,683	8,369,241
Miscellaneous non-operating physical property	3,131,149	2,956,131
Separately operated properties—profit	2,050,342	3,230,514
Dividend income	122,560,524	103,194,671
Income from funded securities	44,172,934	50,520,614
Income from unfunded securities and accounts	24,672,263	27,035,177
Income from sinking and other reserve funds	2,907,967	2,890,362
Release of premiums on funded debt	75,394	295,801
Contributions from other companies	4,752,738	1,032,709
Miscellaneous income	1,630,741	1,616,362
Total non-operating income	$302,717,562	$271,799,234

An analysis of the *non-operating income* of the railroads of the United States, as given by the Interstate Commerce Commission, is presented in the table above.

[1] The statistical tables presented in this chapter are for the years 1916 and 1917, the two years of private operation preceding the period of government control. Complete statistical returns for the first year of private operation following the return of the railroads to their owners on March 1, 1920, have not been published. While the official statistics for the year 1918 are available, they offer no satisfactory basis of comparison with previous years because government operation necessitated many changes in the presentation of financial statements. The finances of the railroads during the period of government control will be considered in a later chapter.

The *operating expenses* of a railroad are divided into eight classes, the most important of which are: Maintenance of way and structures, maintenance of equipment, traffic expenses, transportation expenses and general expenses. Each of the eight classes is in turn subdivided, there being no less than 196 separate items in the operating expenses of Class I railroads, or those having annual operating revenues in excess of $1,000,000. The statistical reports of the Interstate Commerce Commission for 1917 and 1916 show the following summarization of railway operating expenses.

Railway operating expenses of Class I operating railroads for the years ending December 31, 1917, and 1916

	1917		1916	
	Amount	Per cent of total operating expenses	Amount	Per cent of total operating expenses
I. Maintenance of way and structures	$ 442,109,862	15.626	$ 421,775,812	17.891
II. Maintenance of equipment	685,428,913	24.225	595,566,336	25.264
III. Traffic	64,985,070	2.297	62,839,996	2.666
IV. Transportation—rail line	1,506,544,964	53.247	1,164,274,088	49.388
V. Transportation—waterline	9,443,915	.334	9,713,687	.412
VI. Miscellaneous operations	33,437,644	1.182	26,858,441	1.139
VII. General	95,933,290	3.391	84,418,107	3.581
VIII. Transportation for investment—Cr	8,558,535	.302	8,048,055	.341
Total operating expenses	$2,829,325,123	100.00	$2,357,398,412	100.00

The second important class of expenditures of railway corporations is ordinarily called "fixed charges," consisting of such payments as the interest on funded and floating debts, rentals, and appropriations for sinking funds. The first tabular statement on page 135 shows the classification and amount of these expenditures in 1917 and 1916.

The surplus remaining after the payment of fixed charges, operating expenses and taxes is designated as the *net income*. This amount represents the profits of the business and from

it are deducted the dividends on common and preferred stock, the appropriations for additions and betterments, and the appropriations for various reserves which a railway

Deductions from gross income of Class I operating railroads for the years ending December 31, 1917, and 1916

	1917	1916
Hire of freight cars—debit balance	$ 53,552,108	$ 43,622,850
Rent for locomotives	7,090,585	6,644,421
Rent for passenger-train cars	12,790,170	11,981,598
Rent for floating equipment	2,792,423	3,061,272
Rent for work equipment	579,867	520,411
Joint facility rents	42,957,003	41,916,686
Rent for leased roads	132,082,177	158,377,958
Miscellaneous rents	5,743,377	5,523,004
Miscellaneous tax accruals	2,134,435	2,292,698
Separately operated properties—loss	5,754,990	3,451,927
Interest on funded debt	403,305,438	406,667,567
Interest on unfunded debt	15,704,857	14,854,425
Amortization of discount on funded debt	2,442,077	2,893,200
Maintenance of investment organization	385,492	287,015
Income transferred to other companies	1,147,908	3,702,470
Miscellaneous income charges	5,589,696	5,220,459
Total deductions from gross income	$694,052,603	$711,017,961

may maintain. Any surplus or deficit remaining is transferred as a credit or debit to the profit and loss account of the company. The disposition of the net income of the railways of the United States in 1917 and 1916 is given in the reports of the Interstate Commerce Commission as follows:

Disposition of the net income of Class I operating railroads for the years ending December 31, 1917, and 1916

	1917	1916
Appropriations to sinking and other reserves	$ 12,122,185	$ 15,117,355
Dividend appropriations of income	220,822,373	187,985,355
Appropriations for investment in physical property	47,242,469	62,510,056
Stock discount extinguished through income	.....	.....
Miscellaneous appropriations of income	15,382,475	20,359,899
Balance transferred to profit and loss	297,461,104	360,908,008

All of the receipts and disbursements of the railway corporations above described—the operating revenues and expenses, the income from other sources, the amount paid out

as fixed charges, the sums appropriated for dividends and improvements and the balance carried to profit and loss—are listed in the *income and profit and loss statement of the company.* The following table, which represents in a condensed form the income report of the Class I operating railroads of the United States, summarizes the detailed statements previously given and includes also a condensed statement of the profit and loss account of the railroads.

It must be observed that while the income account shows the earnings, expenses and dividends of the leading operating railroads of the United States, the state-

Condensed income and profit and loss statement of Class I operating railroads for the years ending December 31, 1917, and 1916

	1917	1916
Railway operating revenues	$4,014,142,747	$3,596,865,766
Railway operating expenses	2,829,325,124	2,357,398,412
Net revenue from railway operations	$1,184,817,623	$1,239,467,354
Railway tax accruals	$213,920,095	$157,113,372
Uncollectable railway revenues	700,090	797,486
Railway operating income	$970,197,438	$1,081,556,496
Revenues from miscellaneous operations	$ 69,453,732	$ 40,833,977
Expenses of miscellaneous operations	52,401,894	34,324,932
Net revenue from miscellaneous operations	$ 17,051,838	$ 6,509,045
Taxes on miscellaneous operating property	2,883,629	1,966,141
Miscellaneous operating income	$ 14,168,209	$ 4,542,904
Total operating income	$984,365,647	$1,086,099,400
Nonoperating income	$302,717,562	$271,799,234
Gross income	$1,287,083,209	$1,357,898,634
Deductions from gross income	$694,052,603	$711,017,961
Net income	$593,030,606	$646,880,673
Profit and loss:		
Total credits during year	$464,270,561	$416,488,234
Total debits during year	310,369,370	250,923,185
Net increase during year	$153,901,191	$165,565,049
Balance at beginning of year	$1,282,208,129	$1,096,353,229
Balance at end of year	$1,436,109,320	$1,261,918,278

ment would have to be changed considerably before it could be made to apply to these railroads considered as a single large system. In the first place it would be necessary to eliminate certain intercorporate payments such as the sums received for the lease of roads, and as interest on bonds and dividends on stock, because these sums represent merely the transfer of funds from one company to another—from one part of the railway system to another. Furthermore, in the income account for the railroads, considered as a single system, it would be necessary to include the financial statements of non-operating companies, inasmuch as they have certain expenses such as taxes and salaries, and certain receipts other than those received for the lease of their railway properties, which must be con-

Income and profit and loss statement of the railroads of the United States, considered as one system, for the year ending December 31, 1917

Railway operating revenues	$4,178,784,652
Railway operating expenses	2,957,770,809
Net revenue from railway operations	$1,222,013,843
Railway tax accruals	$227,301,093
Uncollectable railway revenues	711,879
Railway operating income	$994,000,871
Equipment and joint facility rents (net deduction)	$26,573,773
Net railway operating income	$967,427,098
Other income	$101,808,148
Gross income, after deducting operating expenses, taxes, equipment and joint facility rents, etc	$1,069,235,246
Net interest on funded and unfunded debt	$475,646,748
Other deductions from gross income	24,371,700
Net income	$569,216,798
Net dividends (including dividend appropriation of surplus)	$293,291,805
Income above dividends	$275,924,993

The "net railway operating income" as computed in the preceding table, for the three years ending June 30, 1917, was the basis for computing the "standard return" which the government paid to the railroad companies during the period of government operation.

sidered. The preceding table gives in condensed form the income account for 1917 of the railroads of the United States, with their operating and non-operating subsidiaries, considered as a single system.

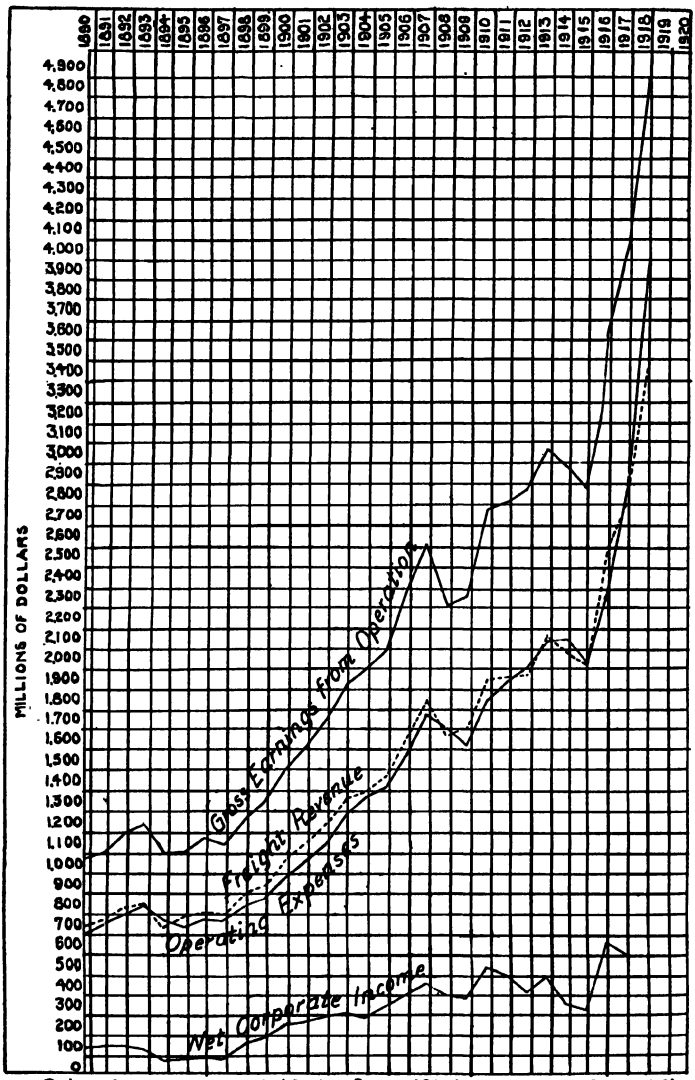
Of the $4,014,142,747 received by Class I railroads in 1917, as operating revenue, $2,829,325,124, or 70.48 per cent, was paid out for operating expenses. The arithmetical relation between the expenses and revenues of operation, which is commonly known as the *operating ratio,* is a significant figure to all railroad officials and holders of railroad securities. A decline in the ratio usually means that the profits of the company are growing, while an increase indicates that there will be a reduced sum of money available to apply to interest charges and to dividends. When the operating ratio rises steadily for a period of years it is a warning signal to railroad managers that expenses must be reduced or the total receipts increased. If neither of these alternatives is possible, profits will disappear, and perhaps the railroad may be compelled to face bankruptcy because of inability to meet fixed charges. If the situation is due to a growth of necessary operating expenses at a rate proportionally greater than the rate of increase of traffic, the only step which can be taken to preserve the credit of the railroads is to increase the charges for transporting freight and passengers.

The net income of the Class I operating railroads of the United States in 1917 was $593,030,606, of which sum $220,822,373 was paid in dividends. A part of the dividends was paid to other railroad companies, thus making the net dividend received by individuals and corporations other than railroads somewhat less than the figures given. The 1917 surplus was $297,461,104.

As was stated in the previous chapter, less than one-half the railroad stock of the United States received dividends in 1900. In 1917, 63.32 per cent of the stock shared

in dividends, though nearly one-third of the amount paid out as dividends came from surplus funds, and not from current income. The prosperous times since 1897 have greatly increased the receipts of railway securities, particularly of the stocks. The large issues of watered stock chiefly account for the fact that such a percentage of the stocks yield no income; indeed, one of the chief purposes of stock watering is to secure larger present investments by speculative capitalists and to anticipate the future increase in the value of the property, the present earning capacity of which has been overcapitalized.

The accompanying chart shows graphically for 28 years, 1890 to 1918, the gross earnings of American railroads, the revenue from the freight service, the operating expenses, and the income available for dividends. The income accounts of railroad reports are an accurate index of general business conditions. During the prosperous years of 1890, 1891, and 1892 gross earnings rose rapidly, and then with the financial depression which began in 1893 they fell off sharply. The position held in 1892 was not regained until near the close of 1897, after which time the increase in earnings was continuous and rapid until 1908, when another short period of business depression occurred. By 1910, total receipts were larger than ever before, and during the next three years there was a steady increase. The fiscal year ending June 30, 1914, showed a decline in the gross and net earnings of railroads, and the fiscal year of 1915 was likewise a poor year for the railroads. During the latter part of 1915 traffic began to increase very rapidly, and during the calendar year of 1916, with the huge traffic of export goods destined for the warring nations of Europe, the railroads of the United States had the most prosperous year in their history. Following 1916 traffic continued to grow, but operating expenses advanced more rapidly than gross receipts. During the entire period of government op-



Railway Earnings in the United States Since 1890-(For Class I Roads Since 1912)

eration the railroads failed to earn the "standard return," because the Railroad Administration failed to make an advance in rates commensurate with the increase of wages and other operating costs.

Other less obvious facts are illustrated by the chart. As gross earnings rose rapidly from 1890 to 1893, the net income available for dividends rose very slowly and actually declined in 1892. The increased receipts were being absorbed by the fixed charges and the operating expenses, especially by the latter. It being the practice of American companies to pay for additional equipment, for improvements and new construction largely from earnings, as well as from the sale of bonds and stock, a portion of the earnings during prosperous times is used in betterments and extensions. What occurred during the three years preceding 1893 took place on a much larger scale during the ten years following 1897, gross receipts advancing at a considerably more rapid rate than net corporate income. From 1910 to 1912, notwithstanding a considerable increase in gross receipts, the net corporate income, because of heavy operating expenses, increased taxes, and large fixed charges, actually declined more than $100,000,000.

A comparison of the curve representing freight revenues with that representing operating expenses shows that when earnings decline it is not possible to curtail operating expenses to an equal degree. Likewise, when there is a large increase in earnings the operating expenses, including the expenditures for additions and betterments, do not always rise with equal rapidity. A large railway business is relatively less expensive than a small one.

The earnings of the railroads have been favorably affected in recent years by many mechanical improvements and their resultant economies. In 1897 the average number of ton-miles per freight train mile was 204; in 1900 it was 271, and in 1917 it was 597. The average earnings per mile run

by a freight train in 1897 were $1.65; in 1900, $2; and in 1917, $4.27. While both the train load and the earnings have been increased during the last few years because of the large volume of traffic, they have also been favorably affected by improvements in track, equipment and management, the influence of which upon earnings will be permanent.

Comparative revenue account per mile of line operated, for specified years

Item	Per mile of line operated									
	1896	1900	1904	1906	1908	1910	1912	1914	1916	1917
Gross earnings from operation.	$6,320	7,722	9,306	10,460	10,491	11,553	11,482	12,387	14,678	17,234
Less operating expenses.....	4,248	4,993	6,308	6,912	7,320	7,658	7,068	8,944	9,362	12,140
Net revenue from operation.....	$2,072	2,729	2,998	3,548	3,171	3,895	3,514	3,443	5,046	5,095

The combined effects of economies in operation and of a large volume of traffic are indicated by the average earnings per mile of line. The facts for a number of years since 1896 are shown in the table on this page. By comparing this table with the preceding chart, it will be seen that the facts regarding changes in earnings and operating expenses per miles are nearly the same as those for the railroad system considered as a whole. The changes in mileage have not been responsible for the changes in average earnings and expenses per mile.

When the net earnings of a railroad are small, its stock will sell at a low figure, and its bonds will not be sought after by investors. The price of securities rises with the increase of earnings, but the two movements are not usually parallel. Larger net earnings come during periods of prosperity, and it is then that speculation is very active; so active, indeed, as usually to make the prices of the stocks most dealt in rise much higher than the gain in earnings

would seem to justify. Similarly when net earnings fall off the speculative demand for the securities affected suddenly ceases and their prices drop out of proportion to the decline in earnings. The fluctuation in market value is much less for bonds than for stocks, but, nevertheless, bonds are affected to a considerable degree by speculation, because speculation in the stock may result in changes of policy as regards capitalization or management that will seriously affect the value and marketability of bonds.

The purchase of the stocks and bonds of most railway companies is usually considered a risky venture for persons seeking a safe and permanent investment. There are several companies, however, whose bonds find comparatively ready sale to insurance companies, savings banks, trust companies, and other fiduciary organizations having funds to invest, and there are a few companies whose stocks are even considered fairly safe. In general, there has been a marked improvement in the merits of railroad securities as forms of investments, but speculation in them is still so active and so little restricted by public regulation as to make them less satisfactory and less beneficial socially than they might be as repositories of the savings of the public.

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PART II

THE RAILROAD SERVICE

CHAPTER X

THE FREIGHT SERVICE—CLASSIFICATION OF FREIGHT

The freight business the most important railroad service, 147
Volume of freight traffic in the United States, 148. Classification of freight, 149. The three great classifications, 150. Commodity tariffs, 155. Uniform classification, 156. How an agent ascertains rates on class and commodity freight, 158. Through and local freight, 159.

THE transportation service performed by the railroads includes the movement of freight, the carriage of persons, and the transmission of mail and express matter. Each of these services merits careful consideration.

Whether viewed from the standpoint of public benefit or considered with regard to the volume of business done and profits received by the company, the transportation of freight is the most important service performed by the railroad. The income from the passenger business is about 22 per cent of the total earnings and income of the railroads in the United States, while the receipts from the freight amount to seven-tenths. Moreover, social welfare is more dependent upon cheap and unfettered movement of commodities than upon inexpensive and speedy means of travel; for, however important it may be that the relatively few people who may at any one time desire to take a journey should be able to reach their destination promptly and comfortably, it is of incalculably greater consequence that producers should be able to dispose of the commodities upon the sale of which their livelihood depends and that consumers should have the power of draw-

ing upon distant as well as near sources of supply for the satisfaction of their wants and the gratification of their desires.

The volume of freight transported increases rapidly with the progress of civilization and the diversification of men's wants. The freight business is carried on to enable men to secure what they want; and the more complex their demands the more goods will be produced and transported. The growing demand for the freight service has furnished a most powerful stimulus to inventors and engineers to lessen the obstacles to the movement of commodities by improving the tracks, cars, and locomotives, and making other changes in the railroad mechanism whereby the costs of transportation have been reduced to their present small amount. Whether the endeavors of railroad companies to increase the speed of their passenger trains or their efforts to lessen the costs of freight movement have been the more potent incentive to mechanical improvements, it would be impossible to say; but the results accruing to society from those improvements have come more largely from the greater facilities for the shipment of goods.

During the year ending December 31, 1918, Class I railroads in the United States reported a freight traffic of 2,305,824,940 tons of revenue freight. This is a greater tonnage than shippers actually turned over to the roads, because the same freight is often handled by more than one road, and duplications result from taking the total of all the traffic of all the companies. After making deductions necessary to eliminate the duplications, it is found that the traffic actually received from shippers during the year amounted to 1,262,621,054 tons. The average distance traveled by each ton of freight was 300 miles, and the number of tons carried a mile—or the "ton mileage"—was 405,379,284,206. To handle that vast tonnage required nearly 50,000 freight and switching locomotives and nearly 2,500,000 freight cars.

The mines from which the coal, iron ore, and other minerals are taken furnish more than half the tonnage handled by the railroads, but as this traffic is carried at low rates per ton the receipts from this business amount to much less than half the total freight revenue of the railroads. Manufactures supply nearly one-sixth of the tonnage, the products of the forest about one-tenth, and the products of agriculture about one-tenth. The remainder of the traffic, comprising slightly less than one-tenth of the total, consists of animal products, general merchandise, and miscellaneous unclassified commodities. There are no figures obtainable regarding the value of the goods which the railroads transport, but if their value does not average more than $25 a ton, their total worth would be nearly $32,000,000,000.

The articles comprised under the seven headings mentioned in the preceding paragraph include many thousand kinds of commodities. In order to establish a basis for fixing rates of charges for transportation it is necessary for the railroad companies to divide these commodities into a small number of groups or "classes." To quote a separate rate between each two termini on each one of the 10,000 to 15,000 commodities would be an almost impossible task, and even if performed, the resulting schedule of rates would be utterly confusing both to freight agents and to shippers. The classification of freight traffic greatly simplifies the work of rate-making.

The practice of classifying freight is very old. On the early wagon routes, freight was very crudely classified into light and heavy articles, the former paying by the cubic foot and the latter by the hundred pounds. In the schedules of charges upon the early English and American canals more detailed classifications were made. The pioneer American railroads naturally adopted, with some modifications, the freight classifications of the canal companies.

During the first half century of railroad development

it was customary for each company to have a classification of its own. At one time there were 138 distinct classifications in eastern trunk-line territory, and shortly previous to the enactment of the Interstate Commerce Act of 1887 there were 130. No shipper, unless he was a rate expert, could determine in advance what his rates would be or what rates were supposedly paid by his competitors. However, with the growth of long-distance traffic and of the need for through rates, through routes and through waybills, there developed in the early eighties a definite movement toward securing a greater degree of uniformity of freight classification. The prohibition of unreasonable discrimination by the Interstate Commerce Act of 1887 and the rulings of the commission stimulated the movement, as it was recognized by the railroads that they could not observe the law unless a more nearly uniform system of classification was devised. Early in 1887 the leading railway lines operating in eastern trunk-line territory adopted a common classification, and by the end of 1889 the southern railway lines and the western lines had taken similar action. The three great classifications adopted at that time are still in existence, though they have been revised and modified many times. By them most of the railway business of the country is handled.

These three classifications, known as the Official, the Southern and the Western, are limited to fairly definite territories. The Official applies to traffic within the region north of the Ohio and Potomac rivers, including New England, and east of Lake Michigan and a line drawn from Chicago through Peoria to St. Louis and the mouth of the Ohio River. The Southern is in force in the region south of the Ohio and Potomac and east of the Mississippi; while the Western applies west of the other two. Occasionally, however, the classifications overlap. Shipments from a point located near a classification boundary are usually governed

by but one classification, that of the point of destination. St. Louis, for instance, though located in Western classification territory, uses the Official Classification for eastbound freight and the Southern for southbound freight. In a few regions the three great classifications are supplemented or displaced by others. In several States—Florida, Georgia, Illinois, Iowa, Louisiana, Texas, Virginia and some others—classifications applicable only to intrastate traffic have been established.

The three large classifications are not made directly by the carriers but by classification committees. Formerly the committee in each territory was made up of a number of traffic officials, representing the various railway companies. Meetings of a committee would be held at regular intervals, but so infrequently that it was impossible for shippers to secure speedy consideration of matters which they presented. In 1914 the organization of the Western Classification Committee was entirely changed, the large committee being superseded by a committee of three members, who sit in constant session and give their entire time to the work of classification. The members of the committee are not employed by or identified with any individual road, but are chosen by the joint action of the interested carriers.

Early in 1916 the Official Classification Committee was reorganized in a similar manner, the former committee of fifteen traffic officials representing the lines in eastern territory, being replaced by a committee consisting of a chairman and three associate members. This committee is ready at all times to confer informally with carriers or shippers concerning classification changes, and it holds regular bimonthly hearings at New York and Chicago to consider proposed changes in or additions to the Official Classification. The decisions of the committee, unlike those of the Western Classification Committee, are not final, but must be submitted to the railroad companies for approval. The

Southern Classification Committee altered its form of organization in 1917, to resemble the form adopted by the other committees. Each committee has permanent offices, the Official Classification Committee having headquarters in New York, the Southern in Atlanta, and the Western in Chicago.

Previous to 1919 each classification committee published a classification book applying to its particular territory. In December, 1919, while the Federal Government was operating the railroads the three-book system was dispensed with, and all three classifications published in a single volume, known as the Consolidated Classification. The second issue of the Consolidated Classification became effective April 1, 1921. It constitutes the 46th issue of the Official Classification, the 45th issue of the Southern, and the 57th issue of the Western.

Though the three great classifications are all now published in a single volume, they are by no means uniform. They have the same rules, with a few minor exceptions, and the description of articles is the same for all three. But each retains its own peculiar system of classifying. The Official Classification contains six numbered classes, a Rule 25 class and a Rule 26 class. Some articles are listed as 1, 1¼, 2, 2½, 3, or 4 times first class, so that in reality there are fourteen classes in the Official Classification. The Southern Classification provides for six numbered and four lettered classes, with some articles rated as 1¼, 1½, 2, 2½, 3 and 4 times first class, while the Western Classification has five numbered and five lettered classes, with various articles listed as 1¼, 1½, 2, 2½, 3, 3½ and 4 times first class.

The number of articles listed in the Consolidated Classification book is approximately 14,000, though the number of ratings is much greater than that in each classification. The same article is very often placed in two or three or

even more classes, the classification varying with the manner in which the goods are packed or otherwise prepared for shipment and with the quantity in which they are offered to the railroad. The class to which a commodity is assigned, and consequently the rate it must pay, are made lower for the carload quantity than for smaller consignments. The reason for this is that business can be done on a large scale more economically than on a small scale. The producer who ships in carload quantities can usually supply the railroad not only with a large amount of freight, but with a regular volume of business, and can thereby enable the carrier to perform the service at much less cost per ton than business can be handled for the small shipper. A certain minimum weight is stipulated for all carload shipments, the minimum weight usually approximating the weight of the article which can be loaded in a car. For a large number of the lighter articles of freight the classification provides that the minimum weight shall vary according to the length of the car used. The minimum weight to be observed for cars of various lengths are given in Rule 34 of the classification, and the articles to which this rule applies are always indicated in the body of the classification by the phrase, "Subject to Rule 34."

The class given an article affects the rate of freight it must pay, those commodities grouped as first class ordinarily paying a higher rate than those catalogued as second class, the second class articles paying heavier charges than those listed as third class, and so on. The class to which particular items are assigned is determined by a variety of considerations. In general it is determined by what rate the article should pay in order to remunerate the railroad for the expenses involved in its transportation, and also by what rate the article can pay—that is, whether it is a commodity of high value for the transportation of which shippers can afford to pay a relatively high rate. Articles

are put into higher classes if their transportation is especially expensive to the railroads and if the value of the service to the shipper is large. The classification of freight is closely connected with the subject of rates, and the factors determining the classification of commodities will be indicated more fully in the chapters on rates.

To illustrate the manner in which commodities are actually grouped in freight classifications and to bring out some of the facts influencing the rating of commodities, there have been compiled in the following table a few ex-

Extracts from Consolidated Classification No. 2

	Ratings		
	Official	Southern	Western
Asbestos Doors, glazed:			
In crates, L.C.L.	D1	2	1
In boxes, L.C.L.	1	3	2
In packages named, C.L., minimum weight, 30,000 lbs.	5	5	5
Magazines or Periodicals:			
In bags, barrels, boxes or wrapped bundles, L.C.L.	1	1	1
In packages named, C.L., minimum weight, 24,000 lbs., subject to Rule 34	3	1	3
Chains:			
Automobile Tire—			
In bags, L.C.L.	2	2	2
In barrels or boxes, L.C.L.	3	2	2
In packages named, C.L., minimum weight, 30,000 lbs.	4	4	4
Key blanks, iron or steel:			
Finished, in barrels or boxes	3	2	2
In the rough, unfinished, in barrels or boxes	R26	3	3
Monuments, metal, N.O.I.B.N., in boxes or crates	2	1	1

tracts from an issue of the Consolidated Classification. The commodities are taken at random from the detailed classification comprising about 14,000 items.

It is evident from the above brief table that the classification of commodities is influenced by the space they occupy, and is also made to depend upon the value of the articles. The expense of transportation to the shipper is made to vary with reference to the value of the commodities, and is in most cases conditioned upon the quantity of shipment. The difference in classification, and consequently in freight charges, between less-than-carload and carload quantities is a wide one, much greater than the variation in classification and rates for the lower groups.

It is never practicable to classify all commodities, and every railroad transports many articles—as, for example, live stock and coal—at special or commodity tariffs. The articles thus treated are invariably handled in carload lots, and in many cases they are not included in the classification, because special conditions of competition between the railways and the carriers by water require that the articles should be especially favored by the railroads in order to prevent the diversion of the traffic to the lake or ocean vessels. The competition between the railroads engaged in transcontinental traffic and the lines of vessels navigated between the two seaboards gives rise to a well-known instance of the exemption from classification of a large number of commodities. A reason which very frequently influences a railroad to exempt a commodity from classification is the desire of the railroad to foster the development of new and special industries. Men who are engaging in new forms of production or are opening up previously undeveloped resources are constantly beseeching the railroad companies for special or commodity tariffs. The railroad companies thus besought by the shippers frequently have difficulty in deciding what course to follow. The railroad

is always desirous of promoting as far as possible the industrial development of the section of country which it serves, but it is at the same time equally desirous of maintaining a schedule of freight charges high enough to yield the owners of the railroad a fair profit upon their investments. The shipper desires to secure the lowest possible rate; the railroad company endeavors to maintain a profitable rate. Generally, however, the shipper succeeds in getting the commodity tariff. In 1921 the Pennsylvania Railroad Company had approximately 700 commodity tariffs in force on its lines east of Pittsburgh, Erie and Buffalo.

Efforts have been made to unify the several freight classifications now in force and to substitute for them one uniform classification. If this could be done successfully it would be highly desirable, because it would enable producers of all commodities in different parts of the country to know accurately what would be the cost of getting their commodities to the market and how much freight they would have to pay upon the supplies brought to them by the railroads. The unification of the classification would also make it easier for shippers and for the state to detect discriminations. The enforcement of a published schedule of rates and the equal treatment of all shippers could be much more readily brought about. Many people, including the members of the Interstate Commerce Commission, have favored Federal laws requiring the railroads to adopt a uniform classification, and, in the case of their failure to do so, empowering the Interstate Commerce Commission to promulgate such a classification. Such a law came near being enacted in 1889; but Congress, upon the advice of the Interstate Commerce Commission, which thought the time had not then arrived for compulsory action, gave the railroad companies an opportunity to attempt to work out a single classification for the entire country. An earnest effort was made by the railroad companies during

the succeeding two years to accomplish this result. The attempt, however, was unsuccessful. In 1907 the question of uniform classification was again taken up seriously by the railways and a committee of fifteen members, consisting of five from each great classification territory, was appointed to consider whether a uniform classification could be devised and to suggest a mode of procedure. This committee, after three months of investigation and deliberation, reported that "while establishment of a uniform classification is impracticable at this time, it can ultimately be worked out along intelligent and satisfactory lines." It suggested as a preliminary step the unification of classification rules, of descriptions of articles and of minimum carload weights, and recommended that a "uniform classification committee" be appointed to undertake this work. Accordingly an executive committee of 21 traffic officials was appointed by the carriers, and that committee selected a sub-committee of nine men who were to devote their entire time to the task. The "working committee" was formally organized and began its duties on September 15, 1908. It made many recommendations which were adopted by the three classification committees, with the result that a much greater degree of uniformity in classification was brought about than traffic experts had deemed possible. It was due chiefly to the efforts of this committee that the Consolidated Classification was published in 1919.

There is still a widespread sentiment in favor of a uniform classification for the entire United States. Though uniformity of classification seems in theory highly desirable, the three main classification territories represent such variations in industrial conditions as to create obstacles which make the work of securing uniformity necessarily slow and difficult. The unification of present classifications would require a general readjustment of rates and might fundamentally alter the existing conditions of competition among rival

producing and manufacturing centers in different parts of the country. It will probably not be impossible, however, to rearrange freight charges on the basis of a uniform classification so as to minimize the interference with industrial competition. Necessarily, some articles will have to be withheld from the classification and be given special or commodity rates, though there are serious objections to increasing the already large number of such tariffs.

The rates to be charged between given points upon shipments of "class traffic," that is, freight moved subject to the rating in the classification book, are specified in another publication called the "class tariff" or rate book. Class tariffs may be *local* or *joint*. The former are issued by an individual railway company for the class traffic between local points, that is, between stations on its own lines; the latter are issued by the originating carrier and concurred in by the connecting lines. When a shipper delivers a consignment of class freight to a railway company for transportation the agent first consults the classification book to ascertain in which class the traffic falls, then turning to the rate book he finds given in "cents per 100 pounds" the rate to be charged from his station to the point of destination. In case the shipment is consigned beyond the boundaries of one of the great classification territories, it is necessary, if no joint through rate is in effect, that the agent find the amount to be charged for that part of the transportation occurring in each classification district, and charge the sum of the several rates, or what is known as a "combination of locals."

In quoting rates on commodity traffic, the freight agent turns directly to the "commodity tariffs." Many commodity tariffs are elaborate. A railway may have arrangements with numerous companies for the through shipment of an important commodity and the tariff sheets must show the rate to hundreds of stations. Other "commodity tariffs" specify the

rates merely to a few commercial centers, and state the sums to be added in order to determine the rates to other regions.

Freight is usually spoken of as through and local. In a popular sense through freight means that which is transported a long distance, and local freight that which is moved only a short distance. The railroad companies, however, use the words in a more technical sense. By local freight they mean that which originates and terminates upon the same line—that is, freight carried between two points on the same road. Through freight is that which comes to the railroad company from some other railroad, or that which, originating at some point on the line, is turned over to some connecting carrier—that is to say, through freight is that in the transportation of which more than one carrying company is employed. In general, the technical use of the terms corresponds with their popular meaning, but not always so. Some freight may travel hundreds of miles, pass State boundaries and move between great centers of population, and yet not leave the original line; while through freight may move only a short distance. The distinction between through and local freight is an important one for the railroads, because they are obliged to employ different methods of accounting when the business is handled jointly with another corporation than when it is confined entirely to their own line.

CHAPTER XI

THE FREIGHT SERVICE, (*Concluded*)—BUSINESS ORGANIZATION

Freight shipping papers, (1) bills of lading, (2) the waybill, 160. Unit billing, 168. Organization of freight service, 168. Demurrage, 170. Reciprocal demurrage, 171. Fast freight lines, 171. Coöperative freight lines, 173. Car interchange and the per diem system, 175. Records of car movements, 175. The railroad clearing house, 176. Private cars and private car lines, 177. References, 179.

In connection with the handling of the freight traffic several shipping papers are necessary. Some of these papers constitute the contract and the record of transactions between the railway company and the shippers and others are used to enable the company to keep an account and a record of the various shipments.

Upon delivering goods to the railroad company at one of its freight stations the shipper receives from the representatives of the company a *receipt for freight.* Large shippers often prefer to furnish their own receipts or bills of lading for the freight agent to check up and sign. Many railroads have wholly dispensed with the receipt, the bill of lading serving therefor. The two papers are identical, except that the shipper's receipt is not negotiable and usually does not contain the rate of charge. The shipper's receipt, wherever issued, may, upon request of the shipper, be exchanged for a *bill of lading.*

The bill of lading is a contract which the railroad makes for the transportation to the proper consignee of the articles

..... Railroad Company

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

Shipper's No._____

Agent's No. .....

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The Rate of Freight from _____

to _____ *is in Cents per 100 Lbs.*

If ... Insulated	If 1st Class	If 2d Class	If Rate 2½	If 3d Class	If Rate 2½	If Rate 2½	If 4th Class	If 5th Class	If 6th Class	If Special per	If Special per .....

RECEIVED, subject as above stated, at _____ Date _____ 191

From _____

Via _____

(Mail Address—Not for purpose of Delivery.)

Consigned to .....

Destination ..... State of ..... County of .....

Route. ..... Car Initial ..... Car No. .....

No. PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)	Rate and Authority	FREIGHT CHARGES		ADVANCES		PREPAID	

THIS FORM TO BE PRINTED ON "WHITE" PAPER.

Shipper. Agent.

Per _____ Per _____

(*This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

STRAIGHT BILL OF LADING

named in the bill. It may be either "straight" or "order." A bill of lading contains a statement of the number of packages shipped, description of the articles, their weight, rate, or class and rate, charges due and advances paid, name of shipper and consignee, shipping point, destination, route, car number and initials and signature of the freight agent and the shipper. It moreover contains an agreement that the articles are accepted and shipped subject to certain stipulated conditions. The contract contained in the uniform bill of lading which was approved by the Interstate Commerce Commission and widely adopted in 1908, contains nine sections, the leading provisions being the exemptions of the carrier from liability for loss or damage due to "the act of God, the public enemy, quarantine, the authority of law, or the act or default of the shipper or owner, or for differences in weights of grain, seed or other commodities caused by natural shrinkage or discrepancies in elevator weights," fire occurring 48 hours after notice of arrival, strikes and riots, and delays ordered by the owner of the goods.

Straight bills of lading are issued on white paper in triplicate form, the original and one copy being given to the shipper, and the other copy being retained by the freight agent. The shipper sends the original to the consignee and keeps his copy as a "memorandum" for his office records; the copy retained by the freight agent, known as the "shipping order," is used in making out the waybill for the shipment and is then filed in the freight station office.

The order bill of lading is issued whenever the shipper desires to secure payment for his goods before delivery is made to the consignee. The contract conditions and the items specified are identical with those of the straight bill, but the freight is consigned to the order of the shipper instead of to the consignee, and with the stipulation that the

..... Railroad Company

Shippers No. .....

ORDER BILL OF LADING—ORIGINAL.

Agents No. .....

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The surrender of this Original ORDER Bill of Lading properly indorsed shall be required before the delivery of the property. Inspection of property covered by this bill of lading will not be permitted unless provided by law or unless permission is indorsed on this original bill of lading or given in writing by the shipper.

The Rate of Freight from.....

to ..... *is in Cents per 100 Lbs.*

If ..Items 1st	If 1st Class	If 2d Class	If Rule 26	If 3d Class	If Rule 26	If Rule 28	If 4th Class	If 5th Class	If 6th Class	If Special per .	If Special per .

From ..... Date ..... 191...

Shipper ..... to .....

Via ..... (Mail Address—Not for purposes of Delivery.)

Consigned to ORDER OF .....

Destination, ... State of ..... County of .....

Notify .....

At ..... State of ..... County of .....

Route, ... Car Initial ..... Car No. .....

NO. PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)	Rate and Authority	FREIGHT CHARGES		ADVANCES		PREPAID	
	THIS FORM TO BE PRINTED ON "YELLOW" PAPER.								

..... Shipper. ..... Agent.

Per ..... Per .....

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

ORDER BILL OF LADING

freight is not to be delivered to the consignee except on presentation of the original order bill of lading properly indorsed. The original is printed on yellow paper and the copies on blue in order to avoid the possibility of fraud. The original order bill of lading is a negotiable instrument, which, when attached to a draft on the purchaser of the goods, may, when properly indorsed, be discounted at the shipper's bank. The bank then sends the bill and draft to its correspondent bank in the city to which the goods are billed. This bank, after collecting the amount of the draft from the purchaser, gives to him the original order bill of lading indorsed by the shipper, and this enables him to obtain his goods from the railway.

In addition to the uniform straight and order bills of lading, there are various other forms to meet particular needs. A uniform *export bill of lading,* which has been widely adopted, is an elaborate document, the contract provisions of which stipulate the conditions under which the traffic received is to be carried over the three distinct parts of its route, that is, (1) from the point of origin to the port from which the goods are to be exported, (2) from the port of export to the foreign port of receipt, and (3) from the foreign port of receipt to the ultimate destination in the foreign country. For the shipment of grain a special kind of bill of lading is often used, and the same is true for the shipment of live stock.

Formerly it was customary for railroads, when receiving certain kinds of traffic, to require the shipper to sign a release, fixing the liability of the railroad for loss or damage at a certain maximum. If the shipper refused to sign such a release he was obliged to pay higher rates. By the Cummins amendment to the Interstate Commerce law, made August 9, 1916, the carriers are required to assume full liability for the actual loss or damage caused by them, regardless of any agreement or regulation limiting their liabil-

ity. The railroad companies have adopted for some commodities a sliding scale of rates based on the actual declared value of the shipments. Such rates can be adopted only with the express consent of the Interstate Commerce Commission.

A. D. 6049

(NOTATIONS OF TRANSFERS, PASSING STAMPS, ETC., SHOULD BE PLACED IN BLANK SPACE BELOW.)

PENNSYLVANIA RAILROAD COMPANY Freight Bill No.

P., B. & W. R. R. W. J. & S. R. R.

WAYBILL OF MERCHANDISE FORWARDED

Length of Car Feet Inches. Marked Capacity of Car Lbs. C. L. Minimum Lbs

Weighed At Scales 191 Gross Lbs. Tare Lbs. Net Lbs. ROUTE No. COMMODITY No. L. or I.

Point of Origin Connecting Line Reference Original Car

Waybilled From Waybill No. Date 191

Shipper to.

Via Consigned to

Destination State of County of

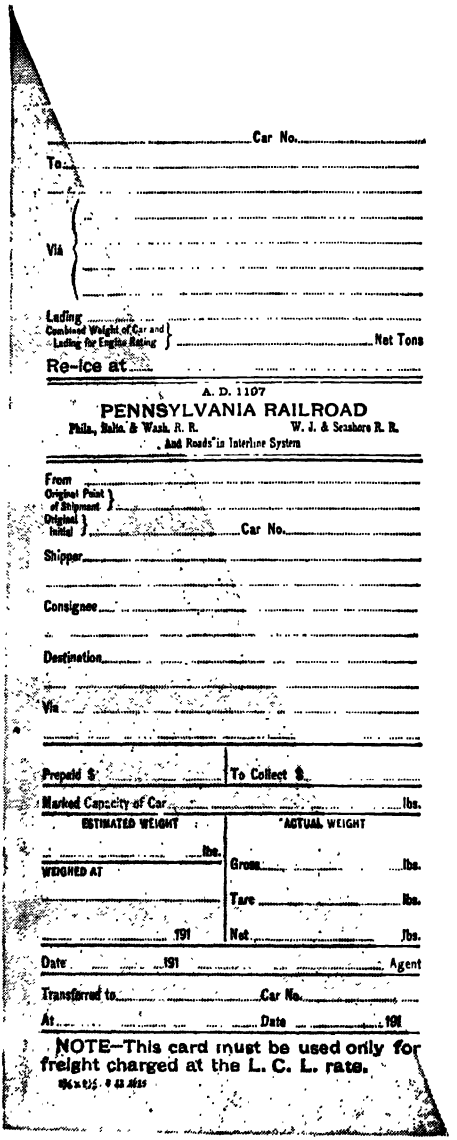
Route Car Initial and No.

No. PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)	Rate and Authority	FREIGHT CHARGES	ADVANCES	PREPAID

REVENUE		
ROADS	PER CENT.	DIVISIONS
TOTAL,		

MERCHANDISE WAYBILL

The railroad keeps account of all shipments made by means of waybills. For every shipment of freight a way-



Car No.

To

Via

Lading

Combined Weight of Car and Lading for Engine Rating } Net Tons

Re-ice at

A. D. 1107

PENNSYLVANIA RAILROAD

Phila., Balto. & Wash. R. R. W. J. & Seashore R. R.

And Roads in Interline System

From

Original Point of Shipment }

Original Initial } Car No.

Shipper

Consignee

Destination

Via

Prepaid $ To Collect $

Marked Capacity of Car lbs.

ESTIMATED WEIGHT	ACTUAL WEIGHT
lbs.	
WEIGHED AT	Gross lbs.
	Tare lbs.
191	Net lbs.

Date 191 Agent

Transferred to Car No.

At Date 191

NOTE—This card must be used only for freight charged at the L. C. L. rate.

bill is made out stating the number and initials of the car in which the goods are sent, giving the names of the consignor and consignee, the points of origin and destination of shipment, a description of the articles, their weight, tariff or class, rate, charges, advances and amounts prepaid and the signature of the freight agent. A copy of every waybill made out is sent to the auditor of freight receipts of the railroad and another copy is kept on file in the office of the forwarding agent. The original waybill either accompanies the freight or is forwarded to destination by mail. If sent by mail a card waybill, containing information similar to that in the original waybill, is made out and given to the freight train conductor. For local freight a local waybill is used; for through freight an interline waybill.

Interline waybills differ from local waybills chiefly in that they route a shipment over specified lines of the company receiving the freight to some point on another (a "foreign") railway. A copy of the interline waybill is sent to each of the railways concerned in the shipment, as well as to the auditor of freight receipts. A great deal of the through freight carried is not sent on interline waybills, but is rebilled at each junction point. Special types of waybills are used by many railroads for particular kinds of freight, such as live stock, perishable commodities, coal, and company freight.

Upon the arrival of a shipment at its destination the receiving agent makes out a *notice of arrival,* a *delivery receipt* and a *freight bill.* These forms each contain the record of the waybill, describe the goods which have been shipped, and state the amount of freight charges. The notice of arrival is sent to the consignee, who calls at the freight house and secures his goods, signing the delivery receipt, which the freight agent retains for his office records. The freight bill, upon payment of the charges indicated,

is signed by the agent and given to the consignee as a receipt.

Some railroads have adopted an ingenious scheme of "unit billing," by which all the shipping papers used with each shipment of freight can be made out by the forwarding agent at one operation. A copy of the waybill is kept by the forwarding agent, the bill of lading is given to the shipper, and the other papers—original waybill, freight bill, arrival notice and delivery receipt—are sent to the agent receiving the shipment. This method saves a great deal of time and eliminates the risk of error due to transcribing. In cases where the shipper so desires he is permitted to prepare the waybill at the same time he prepares the bill of lading and the shipping order, the freight agent filling in such information as is not in the shipper's possession. The Pennsylvania Railroad Company, which uses the unit billing system, has its waybills in four colors, white for a straight consignment, charges collect; pink for a straight consignment, charges prepaid; yellow for an order consignment, charges collect; and green for an order consignment, charges prepaid.

To insure rapidity and regularity in the handling of freight traffic a railroad company finds a thoroughly systematic organization of the service necessary. Each day a large railroad receives at its freight houses, and team tracks, and from industrial sidings thousands of shipments consigned to individuals and firms at many different places. The movement of each article must be accounted for from the time it is received from the shipper until it is delivered to the consignee. How the service is organized to do this may be shown by a brief description of the way a shipment is handled from an outbound freight house in one large terminal to an inbound freight house in another.[1]

[1] For a detailed description of the handling of freight traffic *cf.* Johnson and Huebner, *Railroad Traffic and Rates*, I.

When traffic is delivered to the railroad company by the shipper at the outbound freight house it is weighed and the weights entered on the *shipping order*; the packages are marked to indicate in which car they are to be placed, and are then turned over to truckers to be loaded. The shipping order is stamped with the number of the car in which the goods are placed and is sent to the office, where it is taken first to a rate clerk, who enters the rate and the amount of freight charges. The shipping papers for all the traffic loaded into a single car are placed together and given to a billing clerk, who makes out the waybills for the car, all packages having the same destination being entered on the same waybill. Ordinarily it is possible at each outbound freight house to load a large number of cars with articles for a single destination, and for each of these cars a single waybill is sufficient.

At regular intervals during the day the loaded cars are removed from the outbound freight house and replaced by empty cars. A switch engine hauls the loaded cars to the freight yard, where, with cars coming from other freight houses, and from other points on the railway, they are classified according to destination, and made into trains. The conductor is given either the original waybills or card waybills for his train, and from them he knows what is to be done with each shipment of traffic which the train contains.

When a car arrives at the freight yard at the point of destination, it is switched to an inbound freight house, unloaded, and the contents checked against the waybill. A notice of arrival is sent to the consignee, who pays whatever freight charges may be due the railroad company and receives the goods.

Most of the leading railroads have, within recent years, adopted methods for moving certain kinds of freight more rapidly than others. Such freight is usually known as

"time freight" but sometimes as "preference" or "fast" freight, to distinguish it from the other class known variously as "slow," "ordinary," or "dead" freight. Time freight is usually carried on special trains at the rate of about 20 miles per hour as contrasted with a speed of 12 miles per hour for slow freight. The trains have a regular schedule and special arrangements are made to facilitate their movement. On the road they are given the right of way over other freight trains, and in the yards the cars of fast freight are given preference so that the time occupied in moving them through terminals is much less than that required for the movement of cars loaded with ordinary freight. Some railroads have adopted special billing for their fast freight shipments.

A very large part of the freight received by a railroad company is not brought to its freight houses, but is loaded by the shippers directly into cars placed on team tracks or industrial sidings. In a similar way many consignees have freight delivered in carload quantities directly to their business establishments. When a shipper desires to send carload consignments he requests empty cars from the freight agent who transmits the request to the car distributor. After a car has been delivered to a shipper or after a carload of freight has been delivered to a consignee it is customary for the railroad company to allow a certain length of time—generally 48 hours—in which to load or unload the car. After the expiration of the "free time" the railroad imposes a cash penalty known as *demurrage*. By this means the company is able to keep its freight car equipment in more nearly continuous service. Some railways collect at certain terminals not only demurrage but also *track storage charges*. These charges are designed to discourage the practice which some consignees indulge in of using freight cars as warehouses. Dealers in fruits and perishable produce can often easily afford to pay

demurrage to use cars as warehouses, but in so doing they cause loss and inconvenience both to the railroads and to shippers. It is to overcome this abuse that track storage charges are imposed at certain places.

In several States demurrage is regulated by statute. The law or the railroad commission of the State may fix the length of free time the carriers must allow and stipulate the amount of penalty that may be imposed. Some States have also enacted statutes known as "reciprocal demurrage laws" which impose a penalty on the railroad companies for failure to furnish shippers with cars within a certain time, or for failure to move freight traffic at a stipulated minimum rate of speed. The Interstate Commerce Commission has jurisdiction over demurrage on interstate shipments and it has aided the railways in formulating and adopting a uniform code of demurrage rules. No reciprocal demurrage law affecting interstate shipments has been enacted.

At the beginning of the railway business each company endeavored to keep its own cars upon its own lines, and it was necessary for shipments going over the lines of two or more carriers to be transferred from one car to another at the end of each separate line. A shipper sending a consignment of goods which was to be conveyed by several railroads usually employed an agent at the terminus of each road to take charge of his property and forward it to the next point of reshipment, until it reached its final destination. The inconvenience and expense of this method of transportation led to the formation of the so-called *fast freight lines,* which were companies organized especially to care for joint or interline business. These freight lines provided their own cars and made arrangements with different railroads for hauling them, thus obtaining continuous service between distant points.

A typical corporation of this kind was the Empire Transportation Company, chartered by the State of Pennsylvania

in 1865. This company, which is still in existence, was created to increase the business done over the Philadelphia and Erie Railway, a line connecting Sunbury and Erie, Pa., and forming one of the roads joining New York and Philadelphia with the oil regions in western Pennsylvania and the Great Lakes. As stated by the company, its purpose was "to increase convenience, promptness, and safety in the transfer of property between inland points west on the line of the Philadelphia and Erie Railway and points on the Atlantic slope and seaboard and in the foreign countries east thereof, and to do so in such a manner as should popularize with the shipping public the route formed by that railway and its various connections." Like other corporations of its kind, the Empire Transportation Company solicited freight, provided patrons with cars, charged such rates for its services as competitive conditions allowed, paid the railroad for hauling its cars, and retained the remainder of its income above expenses for distribution among its stockholders. To increase its business, the Empire Transportation Company built pipe-lines within the oil regions, developed terminal facilities on the seaboard and Great Lakes, and established transportation companies on the Great Lakes and railroad lines extending westward from Pittsburgh and Ohio to Chicago, Indianapolis, and other points in the central West.

A traffic organization, such as the Empire Transportation Company developed, was in many ways similar to the companies that were organized for freight and passenger business over the turnpikes and toll roads in the days before railroad construction began. The companies owning the roadbed were distinct from those performing the service of transportation over the road. Such a form of organization had certain advantages, particularly for securing traffic free to move over different and competing lines. It was an efficient solicitor for business. By owning the cars it re-

lieved the railroad companies of the necessity for providing special lines of business with particular classes of rolling stock at a time when the railroad companies were comparatively small organizations. With the progress of the consolidation of railroads, however, the fast freight lines of the class typified by the Empire Transportation Company ceased to be necessary, either to the railroads or to the public. The railroad systems reached such proportions and their interline relations so developed that the railroad companies were able without the assistance of any intervening corporation to take shipments between most distant places. Moreover, independent fast freight lines gave certain individuals an opportunity to divert to themselves a part of the profits which rightfully belonged to the stockholders of the railroad. Some of the independent fast freight lines were controlled by a limited number of the stockholders of the railroad corporations over whose roads the fast freight lines did business, and an unduly large part of the receipts for the transportation business went to the fast freight lines. The railroad company received less than its proper share of the total earnings derived from the business done over its lines.

To obviate this objection, and also to provide more efficiently for the management of interline business, the "co-operative" freight lines were established. These coöperative freight lines represented merely a joint arrangement between several connecting railroads. Each of the railroad companies forming the coöperative line assigned to the line a number of cars, usually in proportion to the number of miles of road. A general manager was put in charge of the coöperative line, with agents at the principal terminals to solicit business and employees to report the movement of the line cars. The earnings of the coöperative line and all its expenses were divided *pro rata* among the interested roads. Thus the coöperative freight line was little more

than a system for securing an inexpensive and honest administration of interline business.

With the growth of railway systems and the perfection of their methods of caring for traffic even the coöperative freight lines lost most of their usefulness though they have continued to be used by the railway companies, chiefly as freight solicitors, trade marks and accounting bureaus. The shipping public has become accustomed to consigning goods to certain fast freight lines, and many railroad companies find that by their use it is easier to control competitive business. The railroads also find these coöperative lines of assistance to them in the settlement of accounts in connection with their interline business. The Union Line of the Pennsylvania Railroad Company was for many years a clearing house for certain accounts of the railroad. Previous to the general reorganization of the Pennsylvania in 1920 the lines east of Pittsburgh were considered as a system distinct from the system comprised by the lines east of Pittsburgh, and the traffic passing between the two systems was treated as through traffic. The accounts of this through business were audited by the auditing organization of the Union Line. This Union Line was organized in 1863 as an independent fast freight line between eastern and western points over the lines of the Pennsylvania Railroad system; but in 1873 the Pennsylvania Railroad Company, having secured control of all the roads over which the Union Line operated, caused the Pennsylvania Company, through which the Pennsylvania Railroad Company controls the lines west of Pittsburgh, to purchase the Union Line. The Union Line still exists, but its chief usefulness to the Pennsylvania System comes from its value as an advertising and soliciting agency. Its symbol, a white star, is seen on many freight cars.

A leading reason for the decline in importance of the fast freight line was the development of a system of car inter-

change among the railroad companies. Though it has long been the practice of railways to permit carload freight to be shipped through from consignor to consignee without transhipment, yet most through traffic before 1890 was handled by the fast freight lines. Railroad companies were reluctant to permit their cars to leave their own lines because it was difficult to get them back and because there was no satisfactory method of securing compensation for the use of the cars by other railroads. The rental for a long time consisted entirely of "car mileage," amounting for several years to three-fourths of a cent per mile run by the car; later the payment was six-tenths of a cent per car per mile. This form of payment was unsatisfactory because a company might retain a foreign car for a long time without moving it more than a short distance. Shippers and consignees were often permitted to use foreign cars for storage purposes, and inasmuch as there was no check upon the accounts of the various railways it was possible for a company to use foreign cars for local freight service without the payment of mileage. Because of the defects of the mileage system of compensation the leading railroads in 1902 adopted the *per diem* system of payment for the use of foreign cars, it being agreed that the owner of a foreign car should receive 20 cents a day for its use. The rate has been changed at various times; it has at times been more than $1 a day. Though the per diem method has not always been sufficient to induce railroads promptly to return foreign cars during times of car shortage it has nevertheless brought about a great improvement of the conditions prevailing under the old system. Not only does it cause railroad companies to return foreign cars more promptly but it gives the companies a strong reason for collecting demurrage charges, thus bringing pressure to bear upon shippers and consignees to avoid delaying the release of freight car equipment.

Every railroad company keeps a record of the daily movement and whereabouts of all the cars on its lines. By means of this record, the amounts due foreign lines for the use of their cars may be computed, and it is possible to learn the location of any car on the system at any time, so that lost cars and lost shipments of freight may readily be traced. The record is kept, either in the form of a card index or of a loose leaf ledger, by the *car accountant,* who secures the necessary information from the reports of freight train conductors and the reports of the agents at junction points where cars are interchanged with other lines. After each trip a freight train conductor is required to make a report showing the point "where from" and the point "where to" each car of his train has been carried. Each time a car is moved its new location is recorded together with the date. From the agents at a junction point the car accountant receives daily car interchange reports showing what cars have been received from, and what cars have been delivered to, other lines. This information the car accountant places in his record, and as soon as possible sends junction reports to the companies owning the interchanged cars, indicating what cars were transferred and to what lines they were delivered. Soon after the close of each month a *per diem report* is made out to the owners of foreign cars, showing the number of days each car has been used and the amounts due.

The per diem accounts between railway companies in the United States, as well as the interline freight accounts, interline passenger accounts and loss and damage accounts, are virtually all settled by draft. In England the railway companies are all members of a clearing house which was organized in 1847 and chartered by Parliament in 1850. The British Railway Clearing House collects all the charges and distributes the earnings on interline business, the railroad companies auditing only their local business.

A clearing house for the settlement of the interline accounts would be a very desirable addition to the business organization of American railways, though the work of such an institution in a country where the distances are so great as in the United States would be much more complicated than in a small country like England. In 1907 the Committee on Car Efficiency of the American Railway Association organized a clearing house which kept a record of car interchanges and settled car-hire accounts for a number of railroads, the most important of which were the Harriman lines. This clearing house, which was limited in scope both as to the kind of accounts it handled and as to the number of railroads it served, was abandoned in July, 1912, and since then no other general clearing house has been organized. It is not unlikely that a clearing house system, either a single great clearing house or a number of district clearing houses, will eventually be adopted by American railways. Inasmuch as the railways are to a certain extent divided territorially and according to ownership into a small number of groups it might be advantageous to establish a clearing house in each one of the territorial sections.[1] Should a law be passed requiring the railroads to be consolidated into a limited number of great systems, a single clearing house could effectively handle all interline financial transactions.

The railroad companies do not furnish all the cars used by shippers. Many large shippers prefer to have their own cars in order that they may be able to ship their goods whenever they desire to do so and in cars especially adapted to the needs of their business. The large meat packers in Chicago, Omaha and other centers of the packing-house business own their own cars, and this is also true to some extent of western fruit growers, the shippers of petroleum,

[1] For an account of a proposed railroad clearing house system for the United States, *cf.* W. E. Hooper, *Railroad Accounting*, 407.

live stock, and coal, and the manufacturers of certain kinds of heavy machinery. On the basis of ownership and management private cars may be divided into two classes: shippers' cars, consisting of those owned by the shipper and ordinarily used only for the carriage of the owner's property, and private car lines, consisting of cars owned by private companies, who lease them to carriers and shippers for general use. To the former class belong most of the coal, ore, oil and fresh-meat cars, and to the latter belong fruit, dairy, poultry and live stock cars.

The private car owner shipping freight in his own car pays the same freight rate as other shippers and the same rate as he would pay if he shipped his goods in a car belonging to a railway. For the use of the car the railroad company usually pays the owner a fixed amount per mile. Though in 1902 a mileage rate was superseded by a per diem rate as the method of payment for the use of foreign railway cars, it was retained in the case of private cars. In times past private car mileage has been as much as a cent a mile. It is now six mills for stock and ordinary cars, while the rate on refrigerator cars is generally one cent a mile in the middle West and three-fourths of a cent a mile in the East and far West.

There are certain objections to the system of private cars. They have led frequently to unjustifiable discriminations between large and small shippers, the man possessing his own cars and shipping in large quantities being able to obtain special favors from the railroad companies. Another fruitful source of dissatisfaction has been the exorbitant charges for refrigeration made by the owners of private cars, but since 1906, when the Interstate Commerce Commission was authorized to regulate such charges just as it regulates freight rates, this abuse has been eliminated. Private cars have unquestionably been of great benefit. Several of the great industries of the country, particularly fruit

raising and meat packing, have reached their present high state of development only because special transportation equipment has been available. In the early days of these industries the railroads were unable or unwilling to supply the necessary equipment, and had not the private car lines been originated the growth of these industries would have been much slower. The tendency on the part of railroads at the present time is to limit the use of private cars as much as possible by supplying themselves all the equipment used by different classes of shippers, and the use of private cars may eventually be limited to a small number of industries. However, the number of private cars in use is large. Their exact number is not known, but there are about 150,000, or about 6 per cent of the total number of cars owned by the railroad corporations.

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CHAPTER XII

THE PASSENGER SERVICE

General characteristics of the passenger service, 181. Comparison of the trend of passenger fares and freight rates in the United States, 182. Volume of passenger traffic in the United States, 185. Comparison of railroad travel in the United States and foreign countries, 186. Classification of passenger travel in Europe, 187. Varieties of passenger service in the United States, 188. Relation between the Pullman Company and the railroad corporation, 193. Passenger tickets and baggage checks, 195. Methods employed to increase traffic, 196. Opportunities for developing passenger traffic, 197. Electricity and the passenger service, 199. Competition of the automobile, 200. References, 200.

THE service of transporting persons differs in several particulars from the freight service. Goods are shipped; men travel of their own volition, controlling, in most instances, the time and direction of their movements. This fundamental distinction necessitates an organization of the freight service different from that required by the passenger business. Freight rates and passenger fares are charges levied for dissimilar services, and to a large extent are determined by different considerations.

One important difference between the two branches of the service is that most freight is moved in carloads or trainloads, the car or train being started when the car is loaded or the train is made up, while the passenger business is performed by trains that run on fixed schedules. This distinction, however, does not apply in all cases. Some commodities, like milk and fresh fruit, are dispatched by trains

which run strictly according to schedule, and the collection and distribution of the traffic at the local centers of production or consumption are usually accomplished by "way-freight" trains which have a more or less definite time of arrival and departure. Frequently the "milk" trains and way-freight trains have passenger coaches attached, and thus perform a mixed service; but the larger share of the freight traffic is handled in trains whose time of departure is arranged with reference to the volume of goods offered for shipment, while passenger trains are dispatched according to prearranged schedules, whether many, few, or no persons present themselves at the station.

The passenger service, moreover, to a far greater degree than is required in the freight business, must provide for speed, safety, comfort, and convenience. While speed and regularity of service are demanded by the shippers of some classes of commodities, the great demand is for cheap transportation, for low rates, and to meet this demand the railroad companies have constantly striven to reduce the costs of handling and moving goods. On the contrary, in the passenger service railroad officials have striven to give a better service, to increase speed, provide for greater safety, and to minimize the discomforts of travel. Travelers in most countries, and particularly in the United States, seem to prefer a good although expensive service to inferior accommodations at low fares. Whether this is true of all classes of American people is open to question; but there is no doubt that excellence rather than economy has been the goal in the development of the passenger service.

Among the results following the pursuit of these different aims in the two main branches of the railroad business has been a large increase in the average freight train load, and a smaller change in the average number of persons per passenger train. In 1890 the number of tons of revenue freight per train averaged 175; in 1900 the average was 344

tons, and in 1918 it was 628 tons. The number of passengers per train was 41 in 1890, and also in 1900; in 1905 the average was 48 and in 1918 it was 76. There was an increase in the number of people carried and in the distance traveled by them, but the growing demand for frequency of service, speed and comfort resulted more in the increase of trains than in a gain in passenger train load.

Another result has been a more rapid decline in freight rates than in passenger fares. The facts regarding rates, fares, and revenue are indicated by the following figures:

	1890	1900	1906	1913	1918
Revenue per passenger per mile, cents	2.167	2.003	2.003	2.008	2.414
Revenue per ton of freight per mile, cents	.941	.729	.748	.729	.849
Revenue per train mile, passenger trains, dollars	1.086	1.010	1.203	1.356	2.232
Revenue per train mile, freight trains, dollars	1.654	2.000	2.608	3.243	5.334

From 1890 to 1900 passenger earnings per passenger mile declined 8 per cent, and freight earnings per ton mile fell during the same period 23 per cent. In the freight service the decrease in rates was more than offset by the introduction of more economical methods of conducting the business, so that there was a large gain in the earnings per mile run by freight trains; but in the passenger service that was not possible, and the train revenue fell off slightly. The figures for 1900 and 1906 reflect the influence of the highly prosperous times then prevailing, and show an arrest in the downward tendency of rates and fares. From 1906 to 1914 there was but little change in passenger fares. The receipts per ton per mile from freight traffic increased slightly until 1911, and declined during the next five years. Following 1917 both freight and passenger earnings advanced rapidly because of the general increases in rates and fares.

Another difference between the freight and passenger services arises from the fact that freight has to be loaded and unloaded at terminals, and yards and depots have to be provided for storing cars and goods. The terminal costs in the freight service—labor, yardage, and storage—constitute a larger share of the total expenses than is the case in the passenger branch of the business. In the large cities, passenger stations are large structures located where real estate is valuable, but they cost less than do the facilities for handling freight, and passengers not only board and leave the trains without assistance, but do so promptly upon the arrival of the train, so that the railroad company is obliged to provide neither extensive yardage for the coaches nor housing accommodations for the traveling public, except for the brief time they must wait for trains.

Another fact affecting the cost of the service, the utilization of cars, and the methods of conducting the business, is that passenger travel is practically the same in each direction. People who leave home return to their homes; but commodities are shipped from the places of production to the localities where they are to be used or consumed; and while everyone who produces is also a consumer, those who supply the world with foods and raw materials dispose of much more tonnage than they purchase. In the United States the freight from the Western and Southern States to the seaboard and to the manufacturing centers is much heavier than that toward the interior of the country. If freight traffic were equal in each direction, the average train load would be heavier and the costs of transportation would be less. In spite of the equilibrium of travel to and fro, the average passenger train carries only 76 persons, or about five and one-half tons of paying load, so strong are the forces compelling frequency, speed, and luxury in the service. If travel, like the movement of commodities, were mainly in one direction, the coaches would contain

fewer passengers on the average than they now do, and the fares would need to be higher than under existing conditions.

The number of passenger trips taken on American railroads in 1900 was 576,865,230, and in 1918, 1,084,997,896, an increase of 88 per cent. The aggregate length of trips taken in 1918 was 42,676,579,199 miles, the average journey per passenger or the average length of trip being 39.33 miles. The increase in the speed of trains and in the comforts of travel was accompanied by a greater amount of long-distance travel, the average trip having lengthened over fifteen miles since 1890.

The revenue derived directly from the passenger service was $323,715,639 in 1900 and $1,027,014,627 in 1918. The income from the carriage of mail and express, and from other earnings attributable to the passenger service, was $74,300,000 in 1900 and $196,000,000 in 1914. From the operation of passenger trains slightly more than one-fourth (25.21 per cent in 1918) of the operating income of railroads is received. In New England the passenger revenues comprise a much larger share of the total, almost one-half of the earnings from operation being derived from passenger trains. In general, the passenger receipts as compared with those from freight are relatively greater the more thickly the region served by the railroads is settled; but such a district as that occupied by the Rocky Mountain and Pacific Coast States of the United States is an exception to the general rule. That part of the United States ranks next to New England as regards the ratio of passenger revenue to total receipts from railroad traffic.

The foregoing figures show that the people of the United States travel frequently; but a comparison of our country with the European countries having the most highly developed means of transportation indicates a greater use of the railroads for travel by some foreign people than by

Americans. Although there is a far greater mileage of railroad in the United States than in any other country, the network of lines is spread over a vast extent of territory, and in a large part of the country serves a scattered and sparse population; while in the United Kingdom nearly half as many people as there are in the entire United States dwell within an area the size of three American States of medium proportions. Long distances deter people from traveling for pleasure, and induce men, when possible, to do business by mail and telegraph. The conditions favoring travel are a dense population living mainly in cities and having an average income large enough to make travel possible.

The people of the United Kingdom take about one-fourth more trips than do the people of the United States, although there are more than twice as many people in the United States. In 1913 the average number of trips per year per person taken by the Briton was about 28.5, while for the inhabitant of the United States the average was 10.4. In the number of passenger trips taken yearly the rank of the United States among other countries is approximately as follows: the United Kingdom, 28.5; Germany, 26.4; Belgium, 24.1; France, 13; United States, 10.4; Canada, 6.2; Italy, 2.5. The significance of these figures is modified by the greater average length of the trip taken by the American, who travels a few more miles each year than do the inhabitants of the leading European countries. The passenger traffic on European railroads is much denser than on those in the United States. An equal mileage of road accommodates a much greater traffic in Europe than in the United States. This is shown by dividing the total number of miles traveled by all passengers (the "passenger miles") by the miles of railroad. Such a calculation shows the miles traveled per mile of railroad to be about 600,000 in the United Kingdom, 678,000 in Germany, 432,000

in France, and 137,000 in the United States in 1912.[1]

In all countries, the United States included, passenger accommodations of different degrees of excellence are provided by the railroads, the charge for the best class of service being more than for the lower classes. In European countries, from three to five grades or classes of service are offered. In the United Kingdom and most of the Continental countries there are three classes—first, second, and third; but in Germany there are four classes, besides special accommodations for the military, which may be considered a fifth class. In the military and fourth classes the coaches are but little better than box freight cars fitted with benches. The third-class car, or compartment, contains comfortable seats, often without upholstery. In the second class the passenger is given more room, he has an upholstered seat, and there are adequate toilet facilities. The first-class compartment has more elegant fittings and appointments than the second class, but the comforts are practically the same. In the United Kingdom there is not a great difference between the accommodations afforded by the second-class and third-class services, both of which compare favorably with the second-class service of Germany. On a few railway lines in England the second-class service has been entirely dispensed with. In nearly all European countries workmen's trains are run at certain times during the day, offering a special service at very low rates to laborers whose work takes them some distance from their homes.

The traveling public in Europe desires the classification of passengers for two reasons: one economic, and the other purely social. The great majority of the people wish to travel inexpensively, preferring economy to luxury, and their demand for a cheap service is met by the railroads in

[1] Statistics of travel since 1913 do not give a satisfactory basis of comparison because of the conditions created by the World War.

the third and fourth classes, and in the slow trains upon which lower fares are charged than on the fast trains. The minority of the passengers are able to pay high fares for more elegant accommodations and for the social distinction attaching to traveling in a class above that taken by most people. In countries where social divisions are sharply drawn, the larger fares exacted for the second and first classes as compared with the third are paid mainly because the first and second classes are taken by only a few people.

In countries where there are only three classes, about nine-tenths of the passengers ride third class, and where there are four classes somewhat more than nine-tenths choose the two lower classes. The first class is patronized less than any other. The division of passengers among the several classes in several representative foreign countries is shown by the following table.

Divisions of passenger travel in various classes in various countries

Country	Year	Per cent of all passengers in class					
		1	2	3	4	Military class	Total
Germany	1912	0.10	7.50	42.00	49.20	1.20	100
Switzerland	1911	0.57	7.18	86.78	5.48[1]	.....	100
Belgium (state)	1911	0.90	10.62	88.48	.....	.....	100
India	1912	0.20	0.82	96.20	2.78[2]	.....	100
Norway	1911	0.06	3.22	96.72	.....	.....	100
Sweden (state)	1912	0.1	4.9	93.8	.....	1.2	100
Denmark	1912	0.22	9.2	90.6	.....	.....	100
United Kingdom	1913	2.12	0.98	96.9	.....	.....	100
France	1911	4.22	18.38	77.4	.....	.....	100
Austria	1912	0.4	5.9	92.6	.....	1.1	100
Hungary	1912	1.1	14.6	82.2	.....	2.1	100

[1] Special class.
[2] Intermediate class between 2d and 3d.

In the United States the passenger traffic is not classified to the extent that is customary in Europe, but the railroads furnish different grades of service corresponding

Comparative data concerning passenger traffic in selected foreign countries and the United States

Country	Year	Number of passengers (in millions)	Number of passenger miles (in millions)	Number of passengers per head of population
Germany	1913	1,797	25,593	26.8
United Kingdom	1912	1,294	14,123	28.5
France	1911	511	10,899	13
Canada	1913	46	3,266	6.2
Japan	1911	151	3,382	2.9
United States	1914	1,053	35,258	10.7

Country	Year	Number of passenger miles per head of population	Average length of trip in miles	Receipts per passenger
				cents
Germany	1913	382	14.2	12.9
United Kingdom	1912	309	8	16.6
France	1911	275	21.3	31.8
Canada	1913	421	71	140
Japan	1911	64.6	22.4	15.5
United States	1914	358	33.61	66.4

Country	Year	Receipts per passenger per mile	Number of passengers per train	Revenue per passenger train mile. (From passenger service only)
		cents		cents
Germany	1913	0.91	84	76
United Kingdom	1912	1.525	...	...
France	1911	1.49	69	103
Canada	1913	1.973	62	122
Japan	1911	.69	111	77
United States	1914	1.982	56	110

Country	Year	Passenger density. (Passenger miles divided by miles of railroad)	Freight density. (Ton miles divided by miles of railroad; net tons)
Germany	1913	678,385	1,078,580
United Kingdom	1912	602,506	559,578
France	1911	432,625	573,095
Canada	1913	111,440	786,000
Japan	1911	683,351	474,317
United States	1914	144,278	1,176,923

in a general way to the classes found on foreign roads. Broadly speaking there are two standard and regular classes of passenger service in this country. By far the most important is the "first-class" coach service which is used by more than 95 per cent of the passengers carried annually. Above this service nearly all railroads have, on their long-distance trains, sleeping cars and parlor cars, in which accommodations may be secured by the holders of first-class tickets on the payment of an extra fare. Over the main routes of long-distance travel nearly all trains carry both parlor and day coaches—that is, they regularly provide two classes of service, and some of the best trains on those routes consist entirely of parlor, sleeping and dining cars.

In addition to the "first-class" service and the Pullman service, as the sleeping and parlor car accommodations are called, the railroads of the United States offer certain special and irregular services inferior to the first class, the most important of which are the so-called "second-class" service, the immigrant service and the colonist service. Until recently most of the railroads sold second-class tickets for all kinds of travel, but the use of these tickets in local service has now been nearly everywhere discontinued. However, second-class tickets for long-distance travel are sold generally west of the Mississippi River. Ordinarily the holder of a second-class ticket is entitled to a seat in the smoking car, or sometimes in the day coach, and is not permitted to purchase accommodations in the "Pullman" cars. In some parts of the West special second-class coaches, and "tourist sleeping cars," in which berths may be secured by the holders of second-class tickets, are provided. Second-class passenger traffic has never been encouraged or stimulated in the United States, and the volume of that class of travel is probably declining. This may be expected to continue until the railroads change their policy and

run second-class trains and cars as a regular part of their service.

The immigrant service offered by the railroads rose in response to the need for a means of giving adequate protection to the newly arrived foreigners and of distributing them from the eastern seaports to other sections of the country. The immigrant traffic originates chiefly at New York, where the greatest portion of the foreign immigrants land in the United States, though there is a small traffic at other eastern and at southern ports. At New York the railroads organized in 1886 the Immigrant Clearing House, the agents of which care for the immigrants from the time they are landed until they are placed on board the train. The traffic is divided among the various roads according to joint arrangements and to some extent it serves as a means of equalizing the through passenger business of competing lines. The accommodations provided for the immigrants are inferior and the fares are naturally low. The equipment used in the service usually consists of old first-class passenger cars, that are comfortable and safe, the immigrants providing whatever sleeping facilities they desire. Ordinarily the traffic is handled by special trains, but when the number of passengers is small they are forwarded in a separate car attached to a regular train. The "colonist fares" offered by railroads are low fares, effective for periods varying from 30 to 60 days, during the spring and fall, from points in the East to the Pacific coast and far Western States. Their purpose is to encourage the movement of settlers to the West.

Another important feature of the passenger traffic of American railways is the large excursion service. It is a general custom for railroads to make low round-trip fares for special occasions, such as presidential inaugurations, conventions, world, state, and county fairs, and hundreds of other large and small events. Seasonal excursions to

pleasure resorts—to the seashore, lakes and mountains in the summer, to the South in the winter—are regularly provided, and Sunday and holiday excursions are arranged for the benefit of the laboring and professional classes. By offering cheap excursion services the railroad companies induce many persons to travel, who, without such services, would stay at home. The traffic increases each year with the growth of population and the increase of the prosperity of all classes. The character of the service depends upon the class of travelers being appealed to and the purpose of the excursion; some of the trains contain only high-grade Pullman equipment, while the cheapest excursion trains are made up of more or less out-of-date day coaches.

Freight and passengers are classified in a different way and for unlike purposes, but in some particulars the reason for the classification is the same. Differences in the cost of the service and in the ability of the article to pay charges determine the class to which a commodity is assigned and the rate which it must bear; likewise the fares collected for each of the several grades or classes of passenger service are fixed with reference to differences in the costs of the service and in the ability and willingness of various classes of travelers to pay. In the passenger, as well as in the freight business, the range of charges as between the higher and lower classes is much greater than the difference in the costs of service.

Most American railroad companies, unlike those in foreign countries, place the sleeping, parlor, and dining car services in charge of a separate company. The Pullman Palace Car Company, of Chicago, from the beginning of this service in the years 1865-1866 has owned and operated most of the cars in use. For many years the Wagner Palace Car Company, of Buffalo, built and managed from one-fourth to one-third of the sleeping, parlor, and dining cars, the Vanderbilt interests controlling the company. In

1899 the two companies consolidated under the name of the Pullman Company, and at the present time that company controls all these extra-fare cars excepting the relatively small number operated by the railroad companies. The Chicago, Milwaukee and St. Paul, the Canadian Pacific, the Great Northern, and a few other companies own and operate sleeping cars.

The respective rights and obligations of the Pullman Company and the railroads over whose lines its cars operate are definitely fixed by contract. The contracts with various railroad companies differ considerably, but there are several provisions that are common to a number of them. The railroad company carries free the employees and officers of the Pullman Company; provides quarters where tickets may be sold; hauls, switches, and inspects the cars; makes ordinary running repairs; and pays a rental or mileage for the use of each car. The amount of the mileage payment is usually graduated according to the annual gross earnings of the car from Pullman tickets, and on most roads if the annual earnings exceed a certain sum, no mileage payment is required. The Pullman Company on its side furnishes sleeping cars sufficient in number to meet all requirements; furnishes conductors, porters and other needed servants, and agrees not to rent more than one stateroom or section against one ticket unless with the consent of the railroad company.

The Pullman Company receives for its cars, in addition to mileage payments from the railroads, the extra fares paid by the passengers for the privilege of riding in the parlor or sleeping cars. The railroad company receives the regular fares paid for the first-class tickets, and in addition a surcharge equal to one-half the amount of the Pullman fare. On some especially fast trains the railroads charge more than the usual first-class fare, to cover the additional expense of running the trains at a high

speed. The parlor and sleeping coaches are much heavier than the ordinary first-class day coach, and have accommodations for fewer people; hence the profits received by the railroads from the parlor and sleeping car traffic are really smaller than those obtained from the day coach service. Some one has said that "the man who sits up all night in the day coach helps pay the fare of the man who rides in the Pullman car." This, however, is not strictly accurate, because the parlor and sleeping car service is probably not often conducted at a loss.

The railroad companies have found it to their advantage to rent the parlor and sleeping coaches instead of owning them, because the Pullman Company, having control of a great number of cars, is able to supply the railroad with just the number of cars required. The number of Pullman cars required by a railroad company varies with the volume of travel, which is greater in some seasons of the year than in others, and which may temporarily be largely increased by some convention, exposition, or other extraordinary event. When one railroad company or one section of the country has a large demand for coaches, some other company or section will probably not need more than the usual quota, and the Pullman Company is thus able to distribute the cars economically according to the needs of the service. If each railroad company owned coaches enough to supply its needs when the travel over its lines was heaviest, some companies would have on hand a large number of idle coaches much of the time. This condition, however, is being changed by the railroad consolidations and the development of systems serving large sections of the country. A railroad system such as the Southern, the Pennsylvania, the Vanderbilt, or the Hill lines, operates over such a wide stretch of country that the volume of travel on its system as a whole must vary within a small enough range to enable the company to employ its parlor, sleeping and dining car

equipment economically. No such company as the Pullman could absorb practically all the field were it to start under the conditions now prevailing, but having acquired the business as it developed, the Pullman Company will doubtless continue for some time to come to perform the service it is now rendering. Eventually, however, the large railroad companies will probably own and operate the sleeping, dining, and parlor cars used on their several lines.

Corresponding to the shipping papers used in the freight service are the passenger tickets used in the passenger service. There are many types of tickets issued to meet particular needs. In general there are two classes: local tickets, good for transportation between points on the same road, and interline tickets, valid on connecting lines; but there are many forms of each of these two classes. The most common are the first-class tickets (local or interline) which may be single-trip or round-trip; excursion tickets, which are usually limited as to time and class of service and are non-transferable; and reduced-fare tickets including second-class, commutation, mileage, immigrant, clergy and children's tickets. Every ticket bears the names of the points of origin and destination, certain contract provisions between the railroad company and the purchaser, the printed signature of the head of the passenger traffic department, a consecutive number and a form number.

All first-class tickets and some of the other forms of tickets entitle the holder to have a certain quantity of baggage transported to his destination free of charge. Each piece of baggage is tagged with a "check," a duplicate of which is given to the passenger to enable him to claim his property at the end of the journey. The baggage arrangements in the United States are superior to those in most foreign countries, and the American railroads are especially liberal in the weight of baggage which a passenger may take without extra charge. In the United Kingdom the

passenger receives no baggage check, and is obliged to identify and claim his "luggage" at the end of the trip. On the Continent of Europe the passenger receives a check for his baggage, but the weight of baggage which he may check without extra payment is usually limited to 56 pounds, and in some countries nothing but hand baggage is exempted from charges. In the United States the railroads permit the passenger to carry as much hand luggage as he wishes, and on most tickets will check 150 pounds without charge. This extra baggage service should be taken into consideration in comparing passenger fares in the United States with those abroad.

In most passenger trains there are more seats vacant than occupied, the average number of passengers per train in the United States being only 76. Over many routes an increase of 50 per cent in the number of persons carried would add little or nothing to the expenses of operation. Under these conditions, profits rise very rapidly with even a moderate increase in business, and consequently the railroad company always has a strong incentive to enlarge the patronage of its road.

Many means are employed to accomplish this. The companies advertise to some extent in the daily, weekly, and monthly journals, and place descriptive literature in conspicuous places. Ticket offices are located in the most central sections of the large cities; agents are employed to solicit patronage, and excursions for many purposes and to many places are organized by the railroads. Some official in the passenger department has general charge of the excursion business. Among other devices to increase travel are the "personally conducted" tours which many companies are now successfully organizing.

The "resort" traffic and suburban traffic, or what is frequently called the commutation business, are zealously stimulated by reductions in fares and by offering an attractive

service. With the growth of wealth in the United States and the increase in the number of those who can afford recreation the summer travel between the cities and the seashore and mountain resorts is rapidly expanding. Likewise the change from city to suburban residence for a part or all of the year is taking place with accelerating rapidity as the inconvenience, discomfort, and expense of getting to and from the city are being lessened. In stimulating suburban residence the trolley and other electric lines have been quite as influential as the steam railroad, and by their competition have in some instances compelled the railroad companies to make their service more attractive by reducing fares and offering better accommodations. The electric lines have in some cases taken so much of the short-distance suburban traffic away from the steam lines as to cause them to curtail or abandon part of the service previously performed. However, the result of the electric lines upon the growth of the suburbs has often been to cause such an increase in population as to enlarge ultimately the traffic of the railroads as well as that of their competitors.

There are two general methods of inducing people to use the railroads more frequently: one is the reduction of fares, the other is the improvement of the service. The American railroads, generally speaking, have been more inclined to follow the latter plan. They have acted upon the theory that they were serving a people having a relatively high average income and willing to pay liberally for comfort, speed, and luxury when traveling; accordingly, the rivalry of competing companies has led to the introduction of a more expensive and more luxurious service rather than a cheaper one. As was stated above, fares have declined very slowly as compared with rates. A reduction of fares to stimulate traffic has been made in many cases, but greater dependence has been placed upon speed and comfort than upon cheap fares to attract travel.

It is possible that a less expensive service offered at rates considerably lower than those prevailing might result in much more travel. There are some students of the subject who think that there would be a large demand for a cheaper service in this country, and who believe that the experience of the foreign railroads, whose inferior but inexpensive service has caused the poor people to travel extensively, would be repeated in this country if the American railroads were to offer the masses of people, whose income is small and to whom speed and luxury are not of prime consequence, an opportunity to travel for fares much lower than those now charged for first-class tickets.

In considering methods for increasing the use of the railroads for travel, the fact should be kept in mind that "the greatest elasticity of demand" exists among those to whom expensive travel is impossible. The desire for travel is universal, and if the costs of traveling can be brought within the means of all with the possible exception of the very poorest classes of society, the number of journeys taken can be greatly increased. The recent advances of charges both in this country and abroad indicate that passenger traffic tends to vary more than proportionately with changes in fares.

It does not necessarily follow that the revenues derived from the larger traffic at lower fares will be more profitable to the railroads, but there are reasons for believing that the addition to the present passenger business of American railroads of a large volume of traffic taken at low fares would add to the net profits of the companies. With an average train load of only 76, it can hardly be doubted that expenses will be enhanced but slightly by additional business. The railroad business is one of "increasing returns" under practically all conditions—a business in which profits rise more than proportionately with an increase in the business done—and the passenger service as at present con-

ducted is one in which the law of increasing returns would operate very strongly. There is, moreover, the practical effect of low fares in other countries to indicate what would probably result from the introduction of a cheaper service at lower fares in this country.

During recent years the development of the passenger service has been influenced to some extent by the use of electricity instead of steam for motive power. The growth of the electric railway has been rapid. In 1887 there were 13 short lines, using altogether about 100 cars; twenty years later there were 39,000 miles of electric line in the entire country, Massachusetts, with 2,233 miles, having as many miles of street railways as of trunk-line railroads. In 1919 there were in the United States 48,326 miles of electric railway. In the beginning these electric lines were laid only in city streets but they soon became suburban and interurban roads. They are now sharing with the steam railroad not a little of the short-distance traffic it formerly monopolized, and in several States a large passenger business for comparatively long distances has been built up by interurban electric railway companies.

Chapter V contained a brief discussion of the leading technical advantages which the electric railway possesses over the steam railroad. The unit of service can be multiplied or divided at will; electrical power is clean, safe, and quiet, and it is in many kinds of service more economical than steam power. In the suburban and to a large extent in the interurban traffic, the electric cars are either run on lines of the connecting street railways or have such close connection with them as to enable passengers to travel directly without delay between their residences and places of business.

The great advance in the costs of transportation since the beginning of the World War has affected adversely the prosperity of electric lines to an even greater extent

than that of steam railroads, and the prospects for the further construction of electric railways in the near future are not bright. Moreover the profits of the electric railways have been materially reduced by the wide use of the automobile. The traffic of virtually all electric lines is chiefly of the short-distance variety, and these roads have felt the competition of the automobile more severely than the steam roads.

But while the construction of electric railways has been checked, there is a steady growth of sentiment in favor of the electrification of steam railroads. Electricity may be expected to take the place of steam as the motive power for short-distance traffic, as, indeed, it has begun to do in the steam roads entering New York City, Philadelphia and some other places. Whether electricity will supplant steam in long-distance traffic is, however, not yet certain, but it would be rash to predict what the future development of the electric motor will be. The accomplishments of electrical engineers, with their present incomplete knowledge of the force with which they are dealing, lead the world to expect yet greater achievements. The possibilities of electricity are doubtless greater than those of steam, and the ultimate use of the electric motor in all branches of the transportation service seems a rational expectation.

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CHAPTER XIII

THE EXPRESS SERVICE OF THE RAILROADS

General character of the express service, 201. The origin of the express service and its subsequent development, 203. The organization of the American Railway Express Company, 203. Express shipping papers, 207. The contractural relations between the American Railway Express Company and the railroads, 207. Express rates, 209. Volume of express business, 213. The parcel post and the express service, 214. Should the present express service be discontinued? 215. References, 216.

THE express business is here studied as a part of the transportation service performed by the railroads. Not all domestic express matter is transmitted by rail, but the railroads have now spread so generally and so thickly over most sections of the United States that the saddle-horse, the stage, and the steamboat have come to be little used by the express companies. In the service between the United States and all foreign countries except Canada and Mexico, the steamship is necessarily the carrier employed. There are but few of the important phases of the business performed by the express companies of the United States not manifest when the subject is viewed from the standpoint taken in this study.

In general, express traffic consists of the commodities, other than mail matter and personal baggage, transported on passenger trains. This statement does not cover quite all the business, because some express goods are sent by fast trains carrying no passengers, but that is exceptional at the present time. Among the articles most frequently carried

by express are parcels of commodities of light weight and high value, valuable papers and documents, books, magazines and other printed matter, paper money, coins and precious stones, and perishable products requiring more rapid transportation and prompter delivery than the railroad companies can offer in their freight service. In addition to the transportation services performed by the express companies, they sell to travelers "express money orders," payable at any of their foreign offices, and they sometimes do an order and commission business, collect accounts and execute papers.

We are here concerned only with the carrying business of the express companies. Strictly speaking, the express business is a part of the freight service, both consisting of the movement of commodities as contrasted with the carriage of persons, which is the passenger service; nor is there any sharp line of distinction between the traffic handled by the express companies and by the railroads as fast freight. The express company will accept virtually any commodity, and the shipper, whatever may be the nature of the goods he is forwarding, has the option of sending his articles as freight on trains running about 15 miles an hour—the consignee to call at the depot for the goods—or by paying about four times the ordinary freight rate, having an express company call at his house or place of business for the packages to be shipped, dispatch them on a train making 30 to 50 miles an hour, and deliver them at the street address of the person to whom the articles are sent.

In actual practice, the competition between the express and freight services is neither so general nor so keen as the statement just made might indicate, partly because the relations of the express and railroad companies are regulated by contract, and partly because the railroad company may frequently receive more for carrying goods for the express company than would be obtained as freight

charges paid by the shipper of the commodities—that is, the railroad company's share of the express charges may be greater than the total charges would be if the goods were carried as freight. In the past railroad companies have sometimes favored the shipment of such bulky commodities as oysters, milk, and fresh fruit by express, but with the recent development of the fast freight service the tendency is to restrict the express traffic to parcels.

During the first decade of the history of the railroads of the United States there was no special organization for handling express matter. Those wishing to send valuable packages quickly to their destination usually entrusted them to the conductors or baggage agents of passenger trains, who left them with the station agents to deliver to the consignee when he called for them. About 1839, William Harnden, perceiving the need for a systematic and responsible service, began receiving parcels for transmission by responsible agents between New York and Boston. He arranged with the railroad and steamship lines to carry his messengers and their packages, and soon organized a service between New York and Philadelphia, and between the United States and Europe. By 1850 his business had been extended into the southern United States.

Harnden's business seems to have been profitable from the start, for in 1840 Alvin Adams began to compete for the New York and New England business. Harnden found the European business so attractive that he emphasized that more than the domestic service, and thus gave Adams a favorable opportunity to enlarge his field of operation. In 1854 Adams and Company, Harnden and Company, and two other smaller firms, Thompson and Company and Kinsley and Company, consolidated and became the Adams Express Company. The firms that united to form the Adams Express Company antedated any others in the service, but the American Express Company was established

in 1850 by the union of the Livingston Company, founded in 1841, and the Wells Company, organized in 1845. Wells, Fargo and Company started in 1852, taking hold of the California business 17 years before the first railroad to the Pacific was completed, and at a time when the stage-coach and ponies were used to transport packages, and when the express agents had many a thrilling episode with Indians and highwaymen. Bandits seem to derive a peculiar satisfaction from "holding up" the carriers of express and mails, the train robbers continuing to follow their nefarious business even at the present time. The Southern Express Company was organized in 1886, its field of activity lying mainly in the region south of the Potomac and east of the Mississippi. The United States Express Company was organized in 1854. It took the central West as its special field and at the time of its dissolution in 1914 most of its business was carried on in that region, though it had several hundred miles of lines in New York, Pennsylvania and West Virginia. The Western Express Company was founded in 1894, and its field of operation being chiefly in Michigan, Wisconsin, Minnesota and North Dakota. Two express companies other than the ones already named have had a part in the development of the express service. The Pacific Express Company, organized in 1879, operated in the southwestern portion of the United States until August, 1911, when its business was taken over by Wells, Fargo and Company; the National Express Company, founded in 1853, carried on business in New York and New England until July, 1912, when its contracts were assumed by the American Express Company.

When the Federal operation of railroads began late in 1917 the four large express companies—Adams, Wells Fargo, American and Southern—controlled about 95 per cent of the express business of the United States, operating over approximately 92 per cent of the railroad mileage

of the country. The Director General of Railroads objected to carrying out the contracts which the express companies had with the railroad corporations. He notified the express companies that if they would organize a single corporation to take entire charge of the railway express business he would make a contract with such a corporation. The four large companies first secured by lease the business of the smaller companies, and then proceeded to organize a new corporation, the American Railway Express Company, which took over all the property of the four large companies, giving in exchange the capital stock of the new corporation, amounting at par to $34,642,000. This corporation for a time operated as a private agency under contract with the United States Railroad Administration, but it too was finally taken under direct Federal control and operated by the government as the railroads were operated.

On December 24, 1919, President Wilson issued a proclamation announcing that he would relinquish control of the express business on March 1, 1920, at the same time that Federal control of railroads would terminate. It became necessary to decide whether the American Railway Express Company should be continued, or whether its business should again be distributed among the companies which had originally formed the consolidation. There was a feeling among government officials and among the officers of the American Railway Express Company that the consolidation should be permitted to continue. The Transportation Act left the matter to the Interstate Commerce Commission, providing that the Commission might, if it thought it to be in the public interest, authorize the continuation of the consolidation, if application for the Commission's approval should be made within thirty days after the passage of the Transportation Act. Formal application for approval of the consolidation by the Commission

was filed on March 22, 1920. A number of State authorities and several shippers' organizations opposed the consolidation because they believed that the elimination of competition would injure the efficiency of the express service. Notwithstanding this objection the Commission gave its formal approval of the consolidation in a decision handed down on December 7, 1920.

The American Railway Express Company was not destined however to maintain a complete monopoly of the express transportation business. Early in 1921 a new express company, the Southeastern, was organized to conduct an express business over the lines of the Southern Railway and the Mobile and Ohio Railroad. The new company operates over some ten thousand miles of line. It is not unlikely that additional express companies will be organized in the course of time, unless the railroad corporations adopt a policy of conducting the express business themselves.

The internal organization of the American Railway Express Company is not a complicated one. The executive officers have titles and functions similar to those of any other large private business corporation. The company has a board of directors, a president, a secretary, and a treasurer, and vice presidents in charge of certain departments. One vice president has charge of the company's finances, another is in charge of the accounting organization, and a third heads the traffic department which solicits business, publishes rates and settles claims. The country is divided into five operating regions or departments, with a vice president having general supervision of the business in each region. Under the operating vice presidents are a number of general superintendents having direct supervision of the service in particular territories, and usually the territory of each general superintendent is subdivided, and each subdivision placed under the immediate control

of a division superintendent. Responsible to the division superintendent are the station agents, who receive and deliver goods, the messengers, who have charge of the articles while in transit, and route agents who regularly inspect the work of the various routes and agencies. At large agencies a number of clerks, drivers and express handlers are employed under the direction of the agent.

The person delivering goods to an express company for shipment receives a *receipt* corresponding to the bill of lading issued by a railroad for freight shipments. The receipt contains the name and address of the consignor and of the consignee, a description of the goods, their declared value, the express charges, a statement of the contract between the express company and the shipper, and the signature of the agent. The receipt is non-negotiable. On every shipment, except money, the agent of the express company is required to affix a label indicating whether the express charges are prepaid or are to be collected from the consignee. A "prepaid" label is printed on yellow, and a "collect" label on white paper. The goods shipped are accompanied by a *waybill* similar to a freight waybill, stating the weight and value of the package, the consignor and consignee, destination, charges, prepaid or unpaid, and shipping directions. A "waybill" label made in duplicate with the waybill, and containing the same information with the exception of the shipping directions, is attached to each shipment. Different colored waybills are used for prepaid, collect, and C. O. D. shipments. The express messengers turn the shipments over to the station agents, who make delivery to the consignee. Usually the consignee receipts for the shipment by signing the delivery book of the driver of the express wagon, but some companies use a *delivery receipt*, made out with the waybill and the waybill label and sent to the receiving agent with the waybill.

The American Railway Express Company has definite

contracts with the railroad companies over whose lines the express service is conducted. With virtually all roads it has a uniform contract, the financial provisions of which were approved by the Interstate Commerce Commission in December, 1920. The railroad agrees to furnish facilities for transportation of express traffic and messengers on passenger, mail, or express trains and to provide terminal space for handling the express traffic, the express company agreeing to pay a reasonable compensation in case it is necessary to construct a special station. The railroad also provides free transportation for the personal property and supplies of the express company and for its officers and employees. The express company assumes all risk of loss or damage to property or persons, and carries free of charge for the railway all money or packages pertaining to the business of the railway.

The railroads of the country are divided into four groups —an eastern, a southern, a western, and a Mountain-Pacific—and the express company makes a financial settlement with the railroads of each group as a whole. From its gross receipts the express company first pays operating charges, rentals and other expenses, and deducts an amount sufficient to pay the interest and discount on funds borrowed and expended for additional property and equipment. The sums thus borrowed, as long as they remain unpaid, are not considered as a part of the capital value of the express company's property. The sum remaining after these deductions are made is termed "income for division." From this is first set aside 2½ per cent for the express company. The remaining balance, designated as "net income for division," is distributed among the railroads in each group, each separate railroad company receiving an amount in the proportion that the gross express transportation revenue earned as its line bears to the revenues earned by all the lines in the group.

Should the 2½ per cent of the "income for division" reserved by the express company exceed 6 per cent of the capital value of the express company's property, the express company agrees to divide the excess "profit" equally with the railroads. The one-half accruing to the express company is to be accumulated until it reaches a sum equal to 10 per cent of the capital value of the company's property, after which the excess profit is to be divided one-fourth to the express company and three-fourths to the railroads. The railroads' share of the profit is distributed first among the groups and then among the individual carriers on a stipulated basis.

The system of rates and classification used by the express companies on traffic shipped in interstate commerce at the present time was promulgated by the Interstate Commerce Commission, July 24, 1913, and went into effect February 1, 1914. Previous to 1906 the express companies were not subject to regulation by the Interstate Commerce Commission and they based their rates largely on the monopoly powers secured by exclusive contracts with railroad companies. Not being required to file tariffs with the Interstate Commerce Commission, the companies ordinarily made out a schedule of rates applicable to shipments from each station. A great deal of discrimination prevailed, the long and short haul basis for making rates being generally ignored, and much higher rates charged at exclusive offices than were charged at competitive points.

By the Hepburn Act of 1906 the express companies were required to file their tariffs with the Interstate Commerce Commission, and it became necessary for them to simplify their rate system. The system devised, however, was not satisfactory to the patrons of the express companies, and many complaints were filed with the Interstate Commerce Commission of unreasonably high and discriminatory rates and of other abuses, such as double collec-

tion of charges, indirect routing, and delays in the settlement of loss and damage claims. Moreover, the classifications and the tariffs of the express companies were expressed in such a confusing manner that the public was compelled to depend almost entirely upon the express agents for information concerning rates, and large shippers were enabled to secure lower rates by taking advantage of obscure rules concerning which most of the public remained uninformed. The almost universal dissatisfaction led to the promulgation of an entirely new system of rates, as above mentioned. The actual rates which the express companies were authorized to charge have been increased several times since 1913; but the system of rate making remains the same.

The express classification authorized by the Interstate Commerce Commission at the time the rate system was revised provided that all commodities not specifically provided for in the classification sheet, except food products and beverages, and some articles taking third-class rates, should be charged the first-class rate. The classification was therefore in reality a "classification exception sheet." Some articles are rated higher than first class if the risk of transportation is great, or if they are light and bulky, and are charged a multiple of the first-class rate.

The new rates devised for express shipments consisted of three factors, first a flat allowance of 20 cents per shipment for collection and delivery service; second, a rail terminal allowance of 25 cents per 100 pounds, except in the region of the Rocky Mountains where it was 55 cents; and third, a charge for rail transportation varying with the weight of the shipment and the distance carried. Rates on second-class shipments were not to exceed 75 per cent of the first-class rates, except that the minimum charge was to be the charge for 10 pounds unless the first-class package rate for the actual weight was less, in which case the

first-class rate was to apply. The third-class rate which was applicable to only a small number of commodities was one cent for each two ounces or fraction thereof, minimum charge, 15 cents. It was provided that the order of the commission was not to apply to any commodity rates which the express companies might make.

To establish the new scheme of rates the Interstate Commerce Commission first divided the map of the United States into 950 "blocks," formed by the intersection of the parallels of latitude with the meridians of longitude. The blocks are numbered so that each number indicates the tier (horizontal) and the row (vertical) in which the particular block is located. Beginning with the first tier the block farthest west is No. 101; directly under that is No. 201; under that No. 301, and so on. The other blocks are numbered consecutively from west to east. By this method the tier of the block is indicated by the "hundreds" figure of its number, and the row by the "tens and units" figures. For example, Block No. 748 is in the 7th tier and the 48th row. Each of the blocks is subdivided into 16 squares or "sub-blocks" designated by the letters of the alphabet from "A" to "Q," the letter "J" being omitted. The map is again divided into five zones, each zone possessing in a general way a certain diversity in the volume and character of express traffic. A general basis of rates was adopted by the commission for each zone, the minimum rate per 100 pounds in Zone I, which corresponds closely with the Official freight classification territory, being 60 cents, and in Zone IV, which includes the Rocky Mountain States, $1.05.

After the country was thus divided into blocks a scheme was devised for indicating in a simple manner the express rate between any two express offices in the country. This was done by compiling a *Directory of Express Stations,* two Rate Tables, and a Rate Scale. *The Directory of Ex-*

press Stations gives a complete list of all express stations in the United States, showing in which block and sub-block each station is located, and indicating the express company or companies operating at each place. Rate Table I contains for each block, in order, the number of the rate scale applying to shipments made to all blocks which are not adjacent; and Rate Table II shows for each block the number of the rate scale applicable between any of its sub-blocks and between its sub-blocks and those of adjacent blocks. The Rate Scale contains 294 numbered schedules of rates, each scale indicating an amount to be charged on first-class merchandise express packages varying in weight from 1 to 100 pounds. The rate on all shipments weighing more than 100 pounds is obtained by charging the per pound rate of a 100-pound shipment.

The express agent at each station is provided by his company with a directory, a classification, the rate tables for the block in which his station is located, and a rate scale showing the charges on both first-class and second-class shipments weighing from 1 to 100 pounds. To ascertain the rate on a package the agent first finds in the directory the block location of the office to which shipment is desired; then if the block is not adjacent to his own, he consults Rate Table I and finds the number of the rate scale applying; after which he turns to the rate scale and finds under the number the charge to be made if the weight of the package is less than 100 pounds. If the package weighs more the charge may be ascertained by a simple computation. For example, to secure the express rate from Harrisburg, Pa., to Peoria, Ill., on a package of first-class traffic weighing 150 pounds, the Harrisburg agent finds in the directory that Peoria is in Block No. 936; Rate Table I for Block 949, in which Harrisburg is located, shows that the rate scale applying to shipments to Block No. 936 is No. 36; Rate Scale No. 36 gives $3.19 as the charge on

packages weighing 100 pounds. At the per pound rate of such a shipment the amount to be charged on a package of 150 pounds is $4.79.

The rates given in the rate scales apply only to property declared by the shipper to be of a value of $50 or less, for any shipment weighing 100 pounds or less, or not exceeding in value 50 cents a pound actual weight for any shipment in excess of 100 pounds. When the declared value exceeds these amounts the rates are 10 cents greater for each $100 or fraction thereof in excess of the values above given. The Interstate Commerce Act authorizes the Interstate Commerce Commission to permit carriers to establish rates dependent upon declared or released values for all kinds of property except ordinary live stock, and the additional charges imposed by the express company for articles of exceptional value have been sanctioned by the Commission.

Since 1906, when the express companies were made subject to the provisions of the Interstate Commerce law, the Interstate Commerce Commission has been able to collect and issue certain statistics concerning the business of the express companies. Annual reports of the earnings, expenses and financial condition of the express companies have been made since 1908, but in only one of these reports, the first, has there been given a statement of the volume of express traffic. The gross receipts from the express transportation business in 1918 amounted to $254,000,000, of which about 50 per cent was paid to the railroads. The operating expenses were so high in that year that the business suffered a deficit of some $16,000,000.

Previous to January 1, 1913, the express companies had a virtual monopoly of the merchandise traffic on passenger trains in the United States. The limit of weight of one package of merchandise that could be sent through the mails was four pounds and the rate was one cent per ounce.

Third-class mail matter (printed matter other than periodicals) could be mailed for one-half cent per ounce, the same limitation of weight applying, except on single books. With the beginning of the year 1913, a parcel post system was put in operation, the weight limit of fourth-class matter being placed at 11 pounds, since increased to 70 pounds for packages not to be carried for more than 300 miles and to 50 pounds for packages to be carried farther.

It was thought that the new parcel post service would to a great extent replace the service given by the express companies, and while it has met with great favor and has absorbed much of the traffic formerly handled by the express companies, the express service still possesses certain advantages which commend it to shippers. Among these advantages may be mentioned the following: the express company handles fragile articles and small packages in safety trunks, while the post office handles such shipments in sacks; the express company gives a receipt for each shipment, the post office gives a receipt only for insured parcels; the express company assumes liability for all loss or damage, while the Government insures only against total loss; the express company carries bullion, money and valuables, assuming full risk; the express company accepts packages of any weight, making special rates for carload shipments. Moreover, the express company, at larger stations, will not only deliver packages to the consignee, but will collect them from the shipper, while parcel post shipments are only delivered. In the matter of rates if the insurance charges on parcel post matter are taken into consideration the rates on long-distance traffic are in most cases higher than the present rates on express traffic. The chief advantage possessed by the parcel post is the cheaper rates on short-distance traffic and, in places where the express company affords a collection service, even this advantage is in a measure offset. In rural communities where the

post office conducts a free delivery service extending several miles from central stations, the parcel post service has the most favoring conditions. Then, too, the cheap rates on uninsured packages attract a large amount of traffic, inasmuch as the percentage of losses is comparatively small, and many shippers are willing to assume the risk.

By a reduction of rates and a few changes in its service it might be possible for the post office to secure a very large portion of the traffic now handled by the express companies. Such a transfer would not greatly affect the service of hauling the cars now performed by the railroads; in fact a combination of the present mail and express service might possibly result in the reduction of the number of cars which it would be necessary to run. In case the Government modified its service so as to secure a large portion of the small package shipments now handled by express it is not unlikely that the railroad companies would find it advantageous to extend their freight service so as to include all the express traffic which would not enter the mails.

The express business was organized as a separate service by companies distinct from the railroad corporations at a time when the railway systems were small and when their facilities for handling traffic expeditiously over short or long distances were undeveloped; but those conditions have ceased to exist now that the railroads of the country have been grouped into large systems. There are single systems of roads comprising almost as many miles of line as were formerly covered by the service of the large express companies, and it has for some time been largely a matter of expediency with many of the railroad companies whether they shall themselves handle the express business done over their lines or whether they shall delegate the service to some other corporation. With an extension of the parcel post service, the assumption of the express business by the rail-

road companies themselves might seem a logical consequence of the present conditions of railway organization and management.

The express service as now performed has the merits of safety, speed, and concentration of responsibility, but a strong objection to the present organization is that two companies are engaged in doing a work that could be performed by one—that the express company is a wheel within a wheel—and that the delegation of the express traffic has caused the railroads to be less zealous in extending their fast freight service, and in developing a speedy local freight service which would be of especial advantage in certain lines of production and trade. The improvement in the fast freight facilities of railroads in recent years has shown that it would not be impossible to create a more highly specialized service which would perform in an adequate and satisfactory manner a large portion of the work now carried on by the express service.

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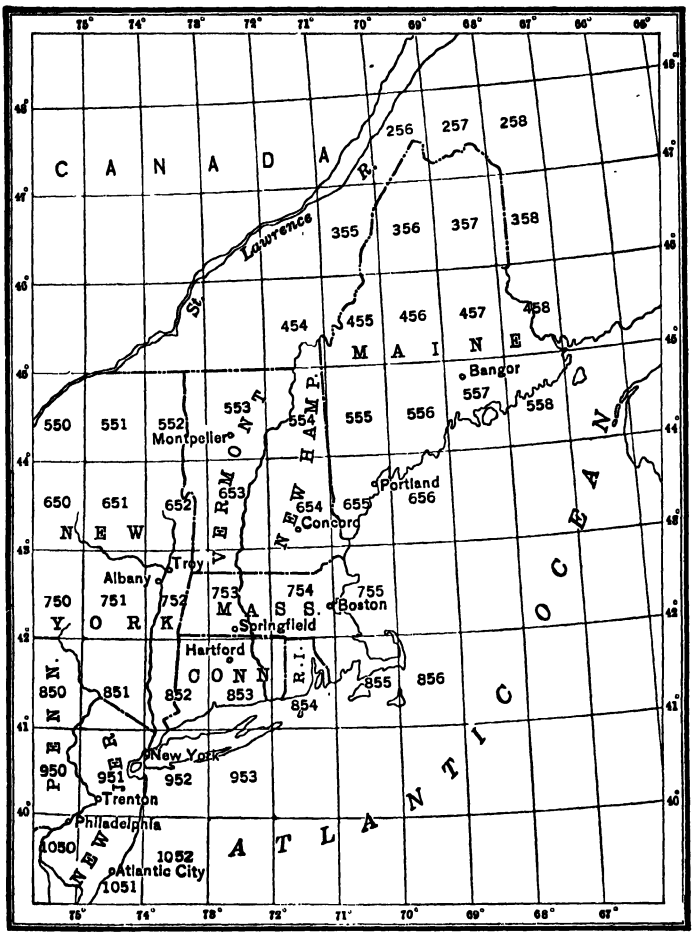
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CHAPTER XIV

THE MAIL SERVICE OF THE RAILROADS

The mail service increases with the progress of civilization, 218. Classification of mail matter, 219. The parcel post rate system, 220. General statistics of mail traffic, 223. Mail transportation, 223. The railway post office, 225. The services performed by railroad companies in transporting the mails, 226. Railway mail pay, 227. The postal deficit and its cause, 232. References, 234.

THE transportation of the mails, like the freight, passenger, and express services, is a distinct and separately organized department of the activities of the railroads. The details of the organization of this department differ in several particulars from those of other branches of the railroad service, because the mail traffic has several unique characteristics.

In studying the railway mail service we are considering only a part of the general postal service of the Government, but the part under consideration occupies a central and indispensable place in the entire service, and a clear presentation of the chief facts regarding the railway mail service reveals something concerning most branches of the postal service. For a detailed study of the activities of the post office the references at the close of this chapter will be of assistance.

The volume of the mail traffic is growing rapidly, more than proportionately with the increase in population. The more highly organized business methods become and the wider the territory reaches over which men extend the

activities of their business, the more largely the mails are used. The more general education becomes, the more time wage-earners and their families have for letter writing and for reading, and the more surplus income they have for the purchase of stamps and literature, the more largely is the postal service employed. The growth of the mail traffic is a general index of the progress of civilization, and as the great bulk of mail matter is transported by the railroads, their mail business is an equally instructive index.

Mail matter as well as freight is classified, but different principles govern the two classifications. Freight is classified with reference to maximum traffic and maximum revenue, whereas the aim of the Government is not to derive a surplus revenue from the postal service, but to administer the post office in such a way as to make it contribute most largely to the convenience of business and to the promotion of public intelligence. If total receipts equal total expenditures, the Government is satisfied; and in order to make the educational value of the mails as great as possible, most printed matter is carried at a loss, some not being charged any postage whatever, the deficits in that portion of the service being made good wholly or partially from the receipts from other parts.

The four classes of mail matter comprise: First, *letters,* post cards, all written matter, and all sealed packages, the rate being two cents an ounce (one cent for post cards); second, *newspapers,* magazines, and other periodicals issued at intervals not exceeding three months. The rate on this class of mail is one cent for four ounces, when mailed by the general public; when mailed by the publishers a zone rate system is used. Local newspapers circulate free of postage within the county of publication, an exception being made of the circulation in cities having a free-delivery service. Third, *miscellaneous printed matter* weighing less than

four pounds, excluding books, the rate being one cent for two ounces. Fourth, *parcel post* matter, made up of all mailable *merchandise,* including farm and factory products, books, and miscellaneous printed matter weighing more than four pounds. The size of parcels is limited to 84 inches combined length and girth, and the weight to 70 pounds for parcels to be carried for a distance of not more than 150 miles and 50 pounds for parcels to be carried farther. The rate on parcels weighing four ounces, or less, except books, seeds, plants, bulbs, etc., is one cent for each ounce, for any distance; on parcels weighing eight ounces or less containing books, seeds, cuttings, bulbs, plants, etc., one cent for each two ounces, regardless of distance; on all other parcels the rate varies according to weight and distance. The parcel post rate system is explained in the following paragraph. Much mail of all classes is carried free, the "franking" privilege being granted to Congressmen and Government officials for all official business.

In devising the parcel post rate system, the United States and Territories, except the Philippine Islands, was divided into units of area 30 minutes square, each unit identical with a quarter of the area formed by the intersecting parallels of latitude and meridians of longitude. The units were numbered in the following manner:·A map of the United States including a strip one-half degree wide, north of the 49th parallel of north latitude, which constitutes the northern boundary of the western part of the United States, was divided into units each 30 minutes square. In the strip just north of the 49th parallel, the unit farthest east was designated 0, the next 50, the next 100, and so on. With these as initial numbers the remaining units in each vertical row were numbered consecutively from north to south. Each unit thus has a number greater by 50 than the adjoining unit to the east; the units are designated by larger numbers as one proceeds westward. Each unit is the basis

of eight postal zones. The first zone comprises all units included in or intersected by a circle with a radius extending 50 miles from the center of whatever unit is taken as a basis; the outer boundary of the second zone is a circle of 150 miles radius; the third, 300 miles; the fourth, 600 miles; the fifth, 1,000 miles; the sixth, 1,400 miles; the seventh, 1,800 miles; and the eighth includes all beyond 1,800 miles. Each post office is supplied with a *parcel post map,* showing all the units and the zones for the particular unit in which the post office is situated, and with a *parcel post guide,* which indicates the unit location of every post office in the country. By consulting the guide the postal clerk ascertains the unit in which the post office of the addressee of a parcel is located, and by consulting the map he finds out the zone. The post offices in the larger cities are now each supplied with a *zone key,* which is a directory indicating the zone location of all other post offices. A zone key makes it possible to dispense with the guide and the map. The parcel post rate system is very simple. For packages intended for local delivery either at the post office or by carrier, the rate is five cents for the first pound and one cent for each additional two pounds or fraction thereof. In the first and second zones the rate for the first pound is five cents and in the succeeding zones in order, 6, 7, 8, 9, 11, and 12 cents. For each additional pound after the first, one cent is charged in the first and second zone, and in each succeeding zone in order, 2, 4, 6, 8, 10, and 12 cents. The table on the opposite page shows the various parcel post rates.

When the parcel post was first established, January 1, 1913, the limit of weight of all parcels was 11 pounds, the rates were somewhat higher than at present, and books were not included. In August 1913 the limit of weight was increased to 20 pounds in the local, first and second zones, and postage rates were reduced in the same zones.

Parcel Post Rates

Weight in pounds	Local	Zones 1st Up to 50 miles	2d 50 to 150 miles	3d 150 to 300 miles	4th 300 to 600 miles	5th 600 to 1,000 miles	6th 1,000 to 1,400 miles	7th 1,400 to 1,800 miles	8th Over 1,800 miles
1	$0.05	$0.05	$0.05	$0.06	$0.07	$0.08	$0.09	$0.11	$0.12
2	.06	.06	.06	.08	.11	.14	.17	.21	.24
3	.06	.07	.07	.10	.15	.20	.25	.31	.36
4	.07	.08	.08	.12	.19	.26	.33	.41	.48
5	.07	.09	.09	.14	.23	.32	.41	.51	.60
6	.08	.10	.10	.16	.27	.38	.49	.61	.72
7	.08	.11	.11	.18	.31	.44	.57	.71	.84
8	.09	.12	.12	.20	.35	.50	.65	.81	.96
9	.09	.13	.13	.22	.39	.56	.73	.91	1.08
10	.10	.14	.14	.24	.43	.62	.81	1.01	1.20
11	.10	.15	.15	.26	.47	.68	.89	1.11	1.32
12	.11	.16	.16	.28	.51	.74	.97	1.21	1.44
13	.11	.17	.17	.30	.55	.80	1.05	1.31	1.56
14	.12	.18	.18	.32	.59	.86	1.13	1.41	1.68
15	.12	.19	.19	.34	.63	.92	1.21	1.51	1.80
16	.13	.20	.20	.36	.67	.98	1.29	1.61	1.92
17	.13	.21	.21	.38	.71	1.04	1.37	1.71	2.04
18	.14	.22	.22	.40	.75	1.10	1.45	1.81	2.16
19	.14	.23	.23	.42	.79	1.16	1.53	1.91	2.28
20	.15	.24	.24	.44	.83	1.22	1.61	2.01	2.40
21	.15	.25	.25	.46	.87	1.28	1.69	2.11	2.52
22	.16	.26	.26	.48	.91	1.34	1.77	2.21	2.64
23	.16	.27	.27	.50	.95	1.40	1.85	2.31	2.76
24	.17	.28	.28	.52	.99	1.46	1.93	2.41	2.88
25	.17	.29	.29	.54	1.03	1.52	2.01	2.51	3.00
26	.18	.30	.30	.56	1.07	1.58	2.09	2.61	3.12
27	.18	.31	.31	.58	1.11	1.64	2.17	2.71	3.24
28	.19	.32	.32	.60	1.15	1.70	2.25	2.81	3.36
29	.19	.33	.33	.62	1.19	1.76	2.33	2.91	3.48
30	.20	.34	.34	.64	1.23	1.82	2.41	3.01	3.60
31	.20	.35	.35	.66	1.27	1.88	2.49	3.11	3.72
32	.21	.36	.36	.68	1.31	1.94	2.57	3.21	3.84
33	.21	.37	.37	.70	1.35	2.00	2.65	3.31	3.96
34	.22	.38	.38	.72	1.39	2.06	2.73	3.41	4.08
35	.22	.39	.39	.74	1.43	2.12	2.81	3.51	4.20
36	.23	.40	.40	.76	1.47	2.18	2.89	3.61	4.32
37	.23	.41	.41	.78	1.51	2.24	2.97	3.71	4.44
38	.24	.42	.42	.80	1.55	2.30	3.05	3.81	4.56
39	.24	.43	.43	.82	1.59	2.36	3.13	3.91	4.68
40	.25	.44	.44	.84	1.63	2.42	3.21	4.01	4.80
41	.25	.45	.45	.86	1.67	2.48	3.29	4.11	4.92
42	.26	.46	.46	.88	1.71	2.54	3.37	4.21	5.04
43	.26	.47	.47	.90	1.75	2.60	3.45	4.31	5.16
44	.27	.48	.48	.92	1.79	2.69	3.53	4.41	5.28
45	.27	.49	.49	.94	1.83	2.72	3.61	4.51	5.40
46	.28	.50	.50	.96	1.87	2.78	3.69	4.61	5.52
47	.28	.51	.51	.98	1.91	2.84	3.77	4.71	5.64
48	.29	.52	.52	1.00	1.95	2.90	3.85	4.81	5.76
49	.29	.53	.53	1.02	1.99	2.96	3.93	4.91	5.88
50	.30	.54	.54	1.04	2.03	3.02	4.01	5.01	6.00
51	.30	.55	.55	1.06					
52	.31	.56	.56	1.08					
53	.31	.57	.57	1.10					
54	.32	.58	.58	1.12					
55	.32	.59	.59	1.14					
56	.33	.60	.60	1.16					
57	.33	.61	.61	1.18					
58	.34	.62	.62	1.20					
59	.34	.63	.63	1.22					
60	.35	.64	.64	1.24					
61	.35	.65	.65	1.26					
62	.36	.66	.66	1.28					
63	.36	.67	.67	1.30					
64	.37	.68	.68	1.32					
65	.37	.69	.69	1.34					
66	.38	.70	.70	1.36					
67	.38	.71	.71	1.38					
68	.39	.72	.72	1.40					
69	.39	.73	.73	1.42					
70	.40	.74	.74	1.44					

The local rate applied to parcels mailed under the following conditions:

1. At any post office for local delivery at such office.

2. At any city letter carrier office, or at any point within its delivery limits, for delivery by carriers from that office.

3. At any post office from which a rural route starts, for delivery on such route, or when mailed at any point on a rural route for delivery at any other point thereon, or at the office from which the route starts, or for delivery on any other rural route starting from the same office.

In March, 1914, books and catalogues were admitted to the parcel post. The rates and weight limits indicated in the table have been in effect since March 15, 1918.

A parcel post package may be insured against loss in an amount equivalent to its actual value, but not to exceed $5, on payment of a fee of 3 cents; not to exceed $25, on payment of a fee of 5 cents; not to exceed $50, for 10 cents; and not to exceed $100, for 25 cents. Receipts are issued to the senders of insured packages. The sender of a parcel post package may have the price of the article collected from the addressee, the fee being 10 cents for an amount not to exceed $50 and 25 cents for an amount not to exceed $100. This service is applicable only to packages mailed to offices where postal money orders are issued.

Accurate statistics of the amount of mail matter handled annually by the Post Office Department have never been collected, though estimates have been made from time to time. In 1917 it was estimated that the total mail traffic on the railroads amounted to 826,090,715 ton-miles. This represented an increase of more than 50 per cent in four years. Since the beginning of the parcel post system the volume of the mail has increased greatly. In his report of 1920 the Postmaster General estimated that more than 2,250,000,000 parcels had been received during the fiscal year. The only class of mail about which accurate statistics are available is the second-class matter, mailed by the publishers. Of this class, in 1920, there were 1,307,227,130 pounds at the pound rates, and 61,528,172 pounds free in county.

The Government employs railroads, steamships, stage-coaches, and messengers to carry the mails, but probably 90 per cent of the total weight of mail and equipment is transported by the railways. A part of the mail transported by the railroads is carried in closed pouches in baggage cars. In the fiscal year of 1920 the closed-pouch

railway mail service had an aggregate mileage of 150,-124,721. A much larger amount of mail was carried in the "railway post offices" or cars equipped as a post office. These cars are in charge of messengers who sort the mail as it is received and place in separate pouches the mail for each city, and if the city is a large one, for various sections of the city. Some times the railway post offices occupy an entire car (some trains being composed only of mail cars, post office and storage), and sometimes they occupy a part of a car, usually the baggage car, in which an apartment is fitted up as a post office. In 1920 a total of 61,497,173 miles of service by full-sized railway post-office cars was authorized, while the authorization of 30-foot and 15-foot apartment post-office car service amounted to 220,644,985 miles.

The Second Assistant Postmaster General estimates that during the fiscal year 1919 the railway post-office clerks made 14,962,066,979 distributions and redistributions of pieces of first-class mail. In addition to this they handled 89,933,071 packages and cases of registered mail.

In addition to the railroads, the Post Office Department utilizes steamboats, electric railways, motor trucks, wagons and airplanes for the transportation of the mail. In several parts of the United States, but particularly in the Western States and in Alaska, there are a number of "star routes," over which the mails are carried under contract to the lowest bidder by wagon, on horseback or by motor car service, between places not reached by railroads or steamboats. The free delivery of mail in rural districts is one of the important branches of the mail service. In 1920 there were 43,445 rural free delivery routes in operation, covering 1,151,832 miles. The Air Mail Service was inaugurated in May, 1918, between Washington and New York. In 1921 this service was conducted over routes aggregating some 4,000 miles. Mail was transmitted by air-

plane from New York to San Francisco in 24 hours less time than it can be carried by rail.

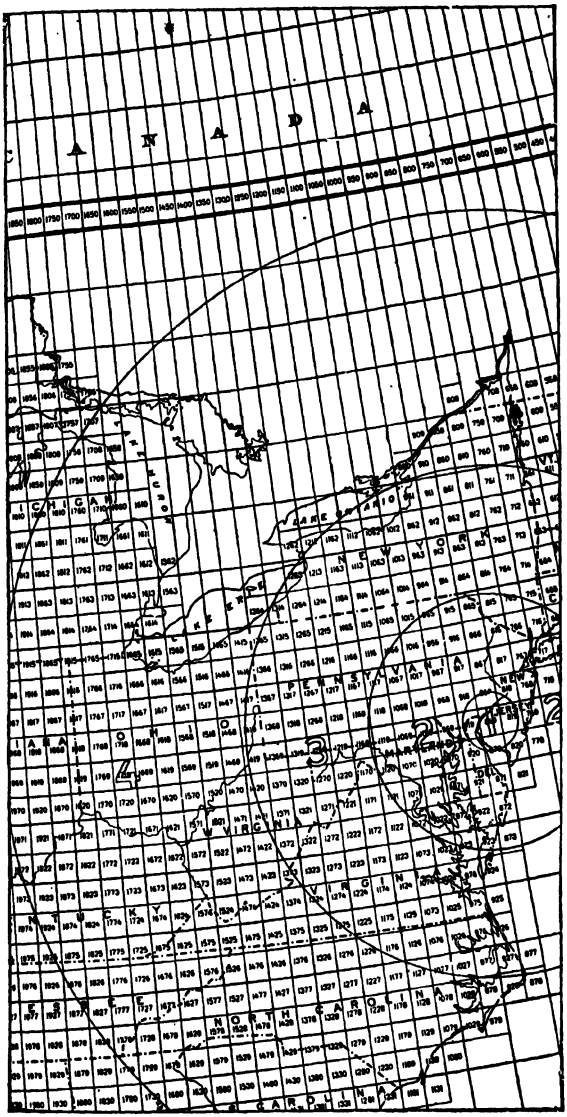
The assorting of mail while in transit was begun in this country in 1862, when Mr. William A. Davis, who was then chief clerk in the mailing department of the post office at St. Joseph, Mo., fitted up the first railway postal cars. These cars were run on the Hannibal and St. Joseph Railroad, and were put in service to facilitate the prompt forwarding of the overland mails westward from St. Joseph, an important distributing point at which the mails were then transferred from the railroad to the "overland stages." The advantages of having the mails reach the distributing point assorted ready to be forwarded without delay to their several destinations were quickly recognized, and the traveling post office was soon established on the principal lines of railroad.

In 1919 there were 2,000 whole cars equipped as post offices and 4,500 more containing postal apartments. In most cases these postal cars are run singly as a part of a passenger train, but on routes where the mails are heaviest "fast mail-trains" are run, composed entirely of postal cars. The mail service over a particular route is generally an adjunct of the passenger service until a weight of 50,000 pounds is reached for a single mail, and when that weight is exceeded fast mail trains are put into service.

The postal cars now being put in service are models of the car-builder's art. They are 60 feet in length, built entirely of steel, mounted on the best of trucks, and are lighted and heated by the most modern appliances. The Government specifies the kind of cars to be used, and every effort is made to insure the safety of the mails and the messengers and to facilitate the accurate and rapid assortment of the mails. By a law enacted August 24, 1912, it was provided that after June, 1913, not less than 25 per cent of the railway post-office cars of any railroad company, not constructed entirely of steel or with steel underframe, should be annu-

ally replaced with cars constructed of steel. In these traveling post offices much of the work is performed that was formerly done at the offices in the distributing centers. A change in the organization of the railway mail service was made in 1911 by the establishment of terminal railway post offices at the railway stations of the large cities. By handling at these post offices a part of the mail formerly sorted in the post-office cars a large reduction was made in the car space and the number of railway postal clerks needed. The terminal post office makes possible the use of labor-saving devices which could not be installed in cars, and also brings about the elimination of much of the rehandling of mail matter.

The services performed by the railroad companies in the transportation of the mails consist chiefly of providing and equipping the postal cars and hauling those and the other cars used for carrying the mails over the routes designated by the Government. Many people suppose that these are the only services rendered by the companies; but there are several other duties performed by the railroads in connection with the carriage of the mails. The employees of the railroad company are required to load the mail into the cars, and when the mails are not in charge of a messenger they are unloaded by the company's agent. The transfer of the mails from car to car and from station to station, when that service is necessary, is made by the company. Except in the large cities, where the carting of the mails is done by the post office, the railroad company carries the mails between the station and the office. At way stations and intermediate post offices the companies are not obliged to carry the mails more than 80 rods, but at terminal stations there is no limit to the distance. In large cities the postal cars must be placed in the central station at a convenient place for loading, and at stations not having terminal post offices they must remain there several hours before the departure



SECTION OF PARCEL POST MAP FOR UNIT NO. 869

of the train by which they are taken, in order that the clerks may have the assortment of the mail well under way when the train pulls out. It is of course a matter of considerable expense to the railroad companies to provide space for the mail cars in their usually crowded passenger terminals. The labor and terminal expenses incurred by the railroad companies in the mail service are said by the companies to be appreciably greater than for the express business.

The Government requires that postal cars be attached to fast trains, and the mails must be taken by such trains as the Government may select. The companies are not permitted to leave any mail behind; whatever the demand for space may be, the demand must be met, and, as has already been stated, the Government stipulates the kind of cars to be used for the postal service, requires the cars to be stationed at the terminals where they can be readily loaded and unloaded; stipulates that companies shall attend to the handling of the mail immediately on the arrival of the trains, and under certain conditions that they shall carry the mails between the stations and the post offices. These strict regulations are necessary to secure the speedy and reliable mail service enjoyed by the public; but they make the transportation of the mails an expensive service, for the performance of which the Government makes large outlays.

The Government paid out more than $105,000,000 in the fiscal year 1920 for the transportation of the domestic and foreign mails, exclusive of expenditures for rural free delivery service. This was somewhat less than one-fourth of the total receipts of the Post Office Department which for that year amounted to $437,150,212. The railroads received $70,714,391 for carrying the mails and maintaining the post-office car service.

The method of paying the railroads for the transportation of the mails was for many years a cause of much controversy between the carriers and the Post Office Depart-

ment. In 1838 Congress enacted a law declaring that all the railroads in the United States at that time, and all that might be constructed thereafter, should be post routes. The Postmaster General was authorized to make the necessary financial arrangements for the transportation of the mails by rail, subject to certain arbitrary limitations which the law imposed, and which were modified from time to time during subsequent years. As time passed the compensation of the railroads for their service failed to grow as rapidly as the mail traffic increased. After the introduction of post-office cars the railroad companies protested vigorously against the inadequate rates of pay allowed by Congress. In 1873 a law was enacted providing for a new method of payment. Under this act the carriers received a certain sum per mile per year according to the daily weight of mail carried. The rate per pound was lowest upon those routes where the mail traffic was heaviest. The railroads also received additional compensation for providing and hauling full-sized post-office cars, though they received no additional pay for apartment cars. The average daily weight of mail carried over a route was ascertained by weighing the mails every four years for a period of 90 successive working days. The country was divided into four "contract sections," and the mail weighed in one section each year. The average daily weight for the weighing period was taken as the average upon which payment was computed for the following four years. The rates of pay established in 1873 were reduced ten per cent in 1876, and two years later were again reduced five per cent. In 1907 a law was passed providing for another five per cent reduction on those routes having an average daily mail traffic of more than 5,000 pounds.

In 1907 the Postmaster General issued a "divisor order" which effected a reduction of about $5,000,000 in the annual payments to the railroads for mail transportation.

This order required that the total number of days in the weighing period, including Sundays, should be used as a divisor in ascertaining the average daily weight of the mails, instead of the number of successive working days. In 1911 the Postmaster General brought about another diminution of railway mail pay by issuing an order requiring that certain periodicals be carried by freight instead of in the mails. All the Postmasters General were desirous of making a favorable financial showing for the Post Office Department, and each one seemed to select the railroads as the chief object of his efforts toward economy. When in 1913 the volume of mail matter was greatly increased by the inauguration of the parcel post service, Congress enacted a law authorizing the Postmaster General to grant to the railroads upon which the mail was not weighed in 1913 an increase in mail pay not to exceed five per cent. This small increase was not enough to compensate the railroads, at the established rates, for the additional traffic they were forced to carry.

The railroad companies protested against the successive reductions in the rates of pay for carrying the mails. On the other hand the Post Office Department claimed that the rates of railway mail pay were too high. The statistics of the mail service unquestionably supported the contentions of the carriers. While the total revenues of the Post Office were advancing from $152,826,585 in 1905 to $287,248,165 in 1915, an increase of 88 per cent, the amount paid to the railroads advanced from $45,040,564 to $59,576,288, an increase of only 32 per cent. The method of compensating the railroads was obviously defective. The infrequent weighing of the mails forced the railroads to carry a much heavier traffic than they were actually paid for hauling. It was unjust to require the roads to provide apartment cars and to transport the mail between postoffices and railway stations for nothing.

In 1912 a Joint Congressional Committee was appointed, with Senator Jonathan Bourne, Jr., as chairman, to investigate the question of railway mail pay. After an exhaustive investigation the committee made a report two years later in which it declared that the railroads were entitled to more liberal compensation, but recommended a complete change in the method of payment. The committee favored the use of space as a basis of payment, the railroads to receive compensation according to the amount of car space devoted to hauling the mails. A bill embodying the recommendations of the committee was introduced in the Senate, but neither this bill, nor another introduced in the House at about the same time, providing also for payment on a space basis, but at much lower rates than those carried in the Senate bill, was passed.

The controversy between the Post Office Department and the railroads continued. Finally in July, 1916, Congress took action, passing a bill providing that the Interstate Commerce Commission should fix and determine from time to time fair and reasonable rates and compensation for the transportation of the mails for the railroads, prescribing the method or methods, by weight, space, or both or otherwise, for ascertaining such rates and compensation. The law provided further that pending action by the Commission the existing rates of pay should continue in effect on all routes, except those which the Postmaster General might select to place upon a space system of pay, at certain rates named in the law. It was stipulated that if the rates of pay established by the Commission should be higher than those named in the law the Postmaster General should readjust the compensation of the carriers on the routes which he should select for experimentation with the space system of payment.

The Postmaster General, instead of selecting a limited number of routes for testing the space method of payment,

announced that he would place virtually all the railroad mail routes of the country upon the space basis, except the closed-pouch routes. The railroads objected strongly to this procedure. The Commission upheld the Postmaster General, and the railroads were placed upon the space basis of pay on November 1, 1916. The carriers and the Post Office Department then agreed upon a weighing and statistical period, lasting from March 27 to April 30, 1917, during which information was collected concerning the baggage, express, mail and passenger service, in order to ascertain the revenues and the expenses of each service. This information was carefully tabulated and submitted to the Interstate Commerce Commission, together with the arguments of the carriers and the Post Office Department as to what the methods and the rates of pay should be. The Post Office Department favored the continuation of the space method, while the railroads advocated a return to the weight basis, with a more frequent weighing of the mails and higher rates of pay.

The decision of the Commission was rendered December 23, 1919. It adopted the space method of payment, and declared fair and reasonable rates of payment as from November 1, 1916, to January 1, 1918, to be:

	Cents
For each mile of service by a 60-ft. R. P. O. car	27
For each mile of service by a 30-ft. apartment car	15
For each mile of service by a 15-ft. apartment car	10
For each mile of service by a 60-ft. storage car	28
For each mile of service by a 30-ft. storage space	15
For each mile of service by a 15-ft. storage space	8
For each mile of service by a 37-ft. storage space	4½
For each mile of service by a 33-ft. storage space	2½
For each mile of service by a 15-ft. closed-pouch space	10
For each mile of service by a 7-ft. closed-pouch space	5
For each mile of service by a 3-ft. closed-pouch space	3

On separately operated railroads not exceeding 100 miles in length and not less than 50 miles in length the Commission allowed rates 20 per cent in excess of those given above, while on roads less than 50 miles in length it allowed 50 per cent higher rates. On roads which had received

land grants from the Federal Government, the rates were, as before, 80 per cent of the rates on other roads. The Commission decided that on and after January 1, 1918, the rates should be 25 per cent higher than the rates prescribed for November 1, 1916. For the performance of "side, terminal or transfer service" the Commission ordered that the carriers be given a separate compensation, to be based upon the actual cost of performing the service.

The Postmaster General, asserting that the rates designated by the Commission were too high, asked for a rehearing of the case and a revised finding, and a number of railroads petitioned that the case be reopened and a modification made in the order of the Commission. All petitions for a rehearing were denied by the Commission, and the rates which it prescribed went into effect. Since the rates were considerably higher than the tentative rates established in the law of 1916, it was necessary for the Post Office Department to readjust the compensation of the carriers for the period beginning November 1, 1916.

The revenues of the Post Office Department have usually been less than the expenditures. One of the chief causes of postal deficits has been the cheap rates of postage charged on the large volume of second-class matter. For many years previous to July 1, 1918, the rate on second-class matter mailed by publishers was one cent a pound. The revenues derived from second-class mail were less than one-fifth the cost of handling it. It was repeatedly urged by various heads of the Post Office Department that the postage rates on second-class matter be increased. In March, 1911, Congress authorized the appointment of a Commission on Second-Class Mail Matter, which was directed to investigate the cost of handling second-class mail and make recommendations concerning rates. This commission, of which Justice Charles E. Hughes was chairman, came to the conclusion that the cost of handling second-

class mail at that time was 5½ cents a pound, and recommended that the rate to publishers be increased to two cents a pound. This recommendation was not followed by Congress, but in the War Revenue Act of 1918 a section was included providing for a substantial increase in publishers' rates on second-class matter. To all publications of which more than 5 per cent of the contents consisted of advertising matter, zone rates were applied on the portion devoted to advertising, while uniform flat rates were retained on the non-advertising matter. The rates prescribed for non-advertising matter were 1¼ cents a pound from July 1, 1918, to July 1, 1919, and 1½ cents a pound thereafter. The rates prescribed on the portion of publications devoted to advertising were as follows:

Rates per pound on portions of publications devoted to advertising

Parcel post zone	July 1, 1918 to July 1, 1919	July 1, 1919 to July 1, 1920	July 1, 1920 to July 1, 1921	On and after July 1, 1921
First	$.01¼	$.01½	$.01¾	$.02
Second	.01¼	.01½	.01¾	.02
Third	.01½	.02	.02½	.03
Fourth	.02	.03	.04	.05
Fifth	.02¼	.03½	.04¾	.06
Sixth	.02½	.04	.05½	.07
Seventh	.03	.05	.07	.09
Eighth	.03¼	.05½	.07¾	.10

The new rates met with vigorous opposition on the part of publishers of newspapers, magazines and other periodicals. There can be but little doubt that there was ample justification for an increase in second-class postage rates, but there is considerable question whether it was advisable to apply zone rates. If the zone rates should lead to regional variations in the subscription rates to newspapers and periodicals the result will probably be a restriction to a limited territory of the circulation of many periodicals which have had a national circulation. Such a result would tend to encourage provincialism, making it more difficult

for the people of one section of the country to understand the point of view of people living in other sections. The postal service should be an agency for the promotion of national unity and not an instrument for the encouragement of sectionalism.

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CHAPTER XV

THE ORGANIZATION OF THE SERVICE

The corporate organization of a railroad company, 235. The secretary's department and law department, 236. The treasurer's department, 237. The accounting department, 237. The operating department and its subdivisions, 238. The traffic department, 241. Other departments, 241. Organization of the Pennsylvania Railroad Company and the Illinois Central Railroad Company, 242. References, 249.

A RAILROAD company is a large corporation with complex activities carried on over wide areas by an army of employees sometimes numbering tens of thousands. To perform its services with precision, to maintain authority, enforce responsibility, and insure financial honesty throughout all grades of officials and employees, and thus to conduct its services with benefit to the public and profit to itself, the corporation requires a detailed and highly specialized organization of maximum efficiency. There must be an unbroken line of responsibility from the lowest subordinate to the president, and the organization by which this is accomplished must have flexibility enough to permit of improvements in the service and the adoption of new technical and financial methods.

The railroad company in common with other corporations has in its organization departments and officials for the management of its financial and legal affairs. The stockholders composing the company choose directors to serve as a governing body, and the directors select a president, secretary, treasurer, comptroller, and a legal counselor. Within this general corporate organization there is also built up a special-

ized organization to accomplish the work which the company exists to perform—the safe and speedy transportation of persons and things.

The special transportation organization is concerned with four general duties. One is to provide and maintain in condition for use a roadway; another is to obtain, keep in order, and operate vehicles of such number and variety as the traffic may require; the third is to furnish facilities that will enable passengers and shippers to use the vehicles and roadbed; and the fourth is to arrange the financial and business relations of the carrier with its patrons in such a way as to promote the interests of both parties.

The president of the railroad supervises and controls all branches of the service, and under his immediate direction there is, corresponding to each of these several kinds of corporate and specialized activities, a department of the railroad company's organization. Two departments are concerned strictly with the affairs of the company as a corporation, the secretary's office and the law department. The *secretary's department* has charge of the company's records, and of a great volume of correspondence carried on within the corporation, and with outside organizations and individuals. The *secretary* keeps minutes of the meetings of the board of directors, notifies the stockholders of regular and special meetings and has custody of all leases and contracts authorized by the board of directors. Under the secretary are a *transfer clerk,* who has charge of transfers of stock and of the books showing its ownership, and a *registrar of stock,* whose duty it is properly to register certificates of stock as they are issued. At the head of the *legal department* is the *general counsel,* who with the solicitors under his direction has charge of the legal business of the company —the preparation and execution of contracts affecting the business activities of the corporation, and the direction of all litigation in which the company becomes involved.

The *treasury department* is concerned with the financial affairs of the general corporation, and is the fiscal agent of the special organization by which the transportation service is performed. It has nothing to do with operating the transportation machine, its duties being connected solely with the receipts and disbursements resulting from conducting the transportation business. This highly important department is usually under the supervision of one of the vice presidents of the company, who is assisted by the *treasurer* and the *cashier.* The duties of the treasurer are those ordinarily pertaining to that office in all business organizations. He must account to the corporation for all its income and for all money paid out, his chief duty being to see that none but properly authorized payments are made from the funds intrusted to his care. A *registrar of bonds,* under the direction of the treasurer, has charge of the transfer and registration of the registered bonds issued by the company.

The *accounting department* also is usually under the supervision of one of the vice presidents of the company, the leading subordinate official being the *comptroller,* who has in charge the immediate direction of the work of the department. The comptroller and the auditors under him are the bookkeepers of the corporation, charged with the duty of keeping a detailed record of all the receipts from freight, passenger, mail, and express services and from other sources, and a record of all expenditures for equipment, supplies and labor, and of such disbursements as interest and dividends. The comptroller has in his office a general set of books containing a complete record of all the business transactions of the railroad; he informs the president at stated intervals of the earnings and expenses of the company, compares regularly the accounts of the treasurer with his own accounts, and directs the inspection of the accounts of all officers and agents intrusted with the handling or care of the money of the company. Another very impor-

tant duty of the comptroller is to verify and approve for payment all vouchers, pay rolls, and other evidences of indebtedness. The comptroller's approval must be given before the treasurer can make any payment of money. In the comptroller's office also elaborate statistical compilations are made for the information of officials in charge of the different departments of the railroad, and for the reports published by the National and State governments. The financial and traffic data furnished by the treasurer and comptroller, and the facts regarding car and train movements given by the car accountant's office in the operating department, supply most of the material used by the president and directors in preparing their annual reports to the stockholders composing the company.

The part of the railroad organization which is directly and solely concerned with transportation is divided into the *operating* and *traffic departments,* each of which is large, and for the purposes of efficient administration is necessarily subdivided into several distinct branches. The operating department is the most comprehensive of all. It provides, maintains and operates all the physical equipment used in transporting passenger and freight traffic, and collects from the patrons of the road the charges for the service, turning the money so collected over to the treasury department. In doing this the operating department performs three general duties: it provides and maintains the roadway and all the structures pertaining to the line; it supplies and maintains the locomotives and cars; it runs the trains and conducts the service at passenger and freight stations. Each of these three duties is made a special branch of the service.

The operating department as a whole is under the supervision of a vice president, though the official in immediate control is the *general manager,* who is the most responsible and usually the hardest worked subordinate officer in the

organization. Sometimes the same individual holds both the office of vice president and that of general manager.

The first of the three main divisions of the operating department is the *roadway department,* which constructs and maintains all the fixed physical property connected with the road—the track, bridges, buildings, pumping-machinery, and signal apparatus. This engineering work is done under the supervision of a chief engineer who establishes the standards according to which the work must be done. Subordinate to the chief engineer are engineers in charge of maintenance of way, maintenance of bridges and buildings, and maintenance of signals. Each of these engineers has the necessary force of assistants and workmen.

The branch of the operating department in charge of the construction and maintenance of locomotives and cars is usually called the *machinery department.* Some companies buy all new equipment, and, in their case, the machinery branch of the service is busied only with repairs and maintenance, but many of the large railroad corporations build at least a part of the locomotives and cars used on their lines. The repairing and constructing of locomotives is in charge of a general superintendent or chief engineer of motive power, assisted by a master machinist, a master car builder, and the requisite foremen and subordinates.

The other main division of the operating branch of the organization is the *transportation department,* which operates the equipment provided by the other two divisions and performs the actual work of moving persons and freight. In general charge of this department is the general superintendent of transportation, who has supervision of all station, train and yard service and of the distribution and use of locomotives and cars. It is his duty to establish and enforce rules which will secure the prompt, safe and economical handling of traffic. Under his direction are a superintendent of freight transportation and a superin-

tendent of passenger transportation who oversee the details of the service, keep a record of the movement of all cars and locomotives on the line, and keep a record of the amounts due to or from other companies for the use of interchanged equipment. The services of the transportation department as a whole are performed by two sets of employees, those composing the station forces and those operating the trains or the train crews. Each of these forces of men has its own organization in charge of a chief responsible to the general manager. The station forces, though directly responsible to the officials of the operating department for the execution of their work, must comply with the instructions issued by the traffic, treasury, and accounting departments with regard to the billing of freight, the sale of tickets, and the accounting for money received.

On a large railroad it is manifestly impossible for the general officers of the operating department to exercise immediate control over the many activities of the service, and consequently a territorial division of the work is made. A large system is divided into a number of grand divisions, and each of these is subdivided into a number of divisions. The "division" is the unit of operation. For the execution of the details of the operating work there have been worked out two different modes of organization known respectively as the divisional and the departmental types. The divisional type is based on a territorial separation of the operating work as a whole, a single official, the division superintendent, having charge of all three branches of operation on a division; while under the departmental type of organization the work of each branch of operation is divided territorially, a separate official, responsible only to the head of his particular department, having charge of each branch of the operating work on a division. With the departmental type of organization there is no official below the general manager having control over all three parts of the work

of operation; under the divisional type the division superintendent bears the same relation to the division that the general manager does to the entire road. In the United States the operating departments of nearly all the large railways are organized on the divisional plan, the New York Central system being the only noteworthy exception. In England, on the contrary, the departmental type of organization is general.

The relations of the carrier and its patrons are adjusted by the *traffic department,* which solicits business, classifies the traffic, determines charges, settles as far as possible the claims of passengers and shippers for lost baggage and freight, and in general concerns itself with increasing the traffic and earnings of the company. It is the business of the operating department to conduct the transportation service economically, expeditiously, and safely; it is the object of the traffic department to secure the maximum passenger and freight business at remunerative rates. One of the vice presidents of the company usually has supervision of this department, the work however being under the immediate direction of a *freight traffic manager* and a *passenger traffic manager,* who are assisted by a general freight agent and a general passenger agent, whose duties are indicated by the title of their positions. Under the general passenger agent are the division passenger, ticket, and baggage agents, and under the general freight agent are the division freight agents and the managers of the fast freight lines. Sometimes the freight claim agent is subordinate to the general freight agent, and sometimes is coordinate with that officer. Some companies have a chief claim agent subordinate only to the traffic manager and those above him. The general passenger agent usually has charge of the mail and express services.

A large railroad requires a great variety of supplies, and for the purchase and distribution of these supplies it has

ORGANIZATION OF ILLINOIS CENTRAL RAILROAD COMPANY, 1921

DIRECTORS, PRESIDENT

- Secretary
  - Assistant secretary (Chicago)
  - Assistant secretary (New York)
- General Counsel
  - New York counsel
  - General solicitor
  - Special attorney
  - Commerce attorney
  - Attorney
  - Land and tax commissioner
- Vice-president (Accounting and treasury departments)
  - Comptroller
    - Assistant comptroller
    - Auditor of freight receipts — Ass't auditor of freight receipts
    - Auditor of passenger receipts — Ass't auditor of passenger receipts
    - Auditor of disbursements — Ass't auditor of disbursements
    - Auditor of station accounts
    - Freight claim agent
    - Auditor freight overcharge claims
    - Car accountant
    - Auditor of miscellaneous accounts
  - Treasurer
    - Assistant treasurer
    - Local treasurer (Chicago)
    - Assistant local treasurer (Chicago)
    - Assistant local treasurer (New Orleans)
- Vice-president (Traffic department)
  - Traffic manager
    - Assistant traffic manager
    - Assistant to traffic manager
    - Coal traffic manager
    - General foreign agent
    - European traffic manager
    - General development agent
    - General freight agent, Northern and Western lines — 5 Ass't general freight agents
    - General freight agent, Southern lines — 5 Ass't general freight agents
    - General passenger agent, Northern and Western lines — 2 Ass't general passenger agents; Division passenger agent
    - General passenger agent, Southern lines — 2 Ass't general passenger agents; Division passenger agent
    - General baggage agent

STOCKHOLDERS, BOARD OF

- Vice-president (Operating department)
  - General manager
    - General superintendent of motive power
      - Superintendent of motives
      - Superintendent of car department
    - General superintendent of transportation
      - Manager perishable freight service
    - Chief engineer
      - Assistant chief engineer
      - Engineer of maintenance of way
      - Engineer of bridges
      - Engineer of buildings
      - Signal engineer
        - Superintendent of bridges
    - Superintendent of telegraph (2)
    - Chief surgeon
    - General claim agent
    - Superintendent of dining service
    - Manager baggage and mail traffic
    - General superintendents
    - Superintendent of stations and transfers
    - General chairman of safety committee
    - General agent
      - Division engineers
      - Master mechanics
      - Trainmasters
      - Despatchers
      - Station agents
      - Division superintendents
- Vice-president (Purchasing and supply department)
  - Purchasing Agent
    - Assistant purchasing agent (2)
    - General storekeeper
      - Assistant general storekeeper (2)
    - Superintendent timber department
      - Lumber agent
- Vice-president in charge of Chicago terminal improvements
  - Chief engineer
- Valuation engineer
  - Mechanical valuation engineer

ORGANIZATION OF THE PENNSYLVANIA SYSTEM, 1921

System Officers

DIRECTORS, PRESIDENT

Assistant to president		
Secretary	5 Ass't secretaries Assistant to secretary	
General counsel (Philadelphia)	General solicitor 3 Ass't general counsels Chief claim agent	2 Ass't general solicitors
General counsel (Pittsburgh)	General solicitor 2 Ass't general counsels Chief claim agent	2 Ass't general solicitors
Vice-president (corporate work, companies west of Pittsburgh)		Assistant to vice-president
Vice-president (Operating department)	Vice-president in charge of personnel Chief of transportation General superintendent of telegraph Superintendent of car service Chief of motive power Works manager Works accountant Motive power accountant Chief mechanical engineer Chief engineer 2 Engineers of bridges and buildings 4 Ass't engineers of bridges Architect Chief inspector Valuation engineer Engineer of standards and valuation Chief signal engineer Engineer of water service	2 Ass't chiefs of transportation 2 Ass't chiefs of motive power 3 Ass't chief engineers 7 Ass't to chief engineer 2 Ass't valuation engineers Assistant chief signal engineer
Vice-president (Traffic department)	General traffic manager	Manager through freight traffic Express traffic agent Chief of mail service and traffic Warehouse superintendent
Vice-president (Treasury department)	Treasurer (Philadelphia)	5 Ass't treasurers General paymaster Cashier — 3 Ass't cashiers Registrar of bonds — Assistant registrar
	Treasurer (Pittsburgh)	4 Ass't treasurers Assistant to treasurer Cashier — Assistant cashier

STOCKHOLDERS, BOARD OF

- Vice-president (Accounting department)
  - Comptroller (Philadelphia)
    - 2 Ass't comptrollers
    - General accountant
    - Auditor of revenue — Ass't auditor of rev.
    - Auditor of expenditures — Ass't auditor of exp.
    - Ass't auditor of through freight traffic
    - Auditor through passenger traffic — Ass't auditor t.p.t.
    - Auditor local freight traffic — Ass't auditor l.f.t.
    - Auditor local passenger traffic — Ass't auditor l.p.t.
    - Auditor disbursements — Ass't auditor disb.
  - Comptroller (Pittsburgh)
    - 2 Ass't comptrollers
    - General accountant
    - Auditor through freight traffic
    - Auditor local freight traffic — Ass't auditor l.f.t.
    - Auditor local passenger traffic
    - Auditor disbursements — Ass't auditor disb.
- Vice-president (Real estate, purchasing and insurance departments)
  - General real estate agent
  - General purchasing agent — Assistant to general purchasing agent
  - General supervisor of stores
  - Superintendent of insurance dep't — 2 Ass't superintendents insurance dep't.
- Relief and Pension Department — Under supervision of vice-president in charge of personnel
- Employees' saving fund — Under supervision of vice-president in charge of treasury department

REGIONAL OFFICERS

- Vice-president (Eastern Region)
  - Operating department
  - Traffic department
  - Treasury, purchasing, real estate, and accounting.

  Organization similar to that of Northwestern Region, given below.
- Vice-president (Central Region)
  - Operating department
  - Traffic department
  - Treasury, purchasing, real estate, and accounting.

  Organization similar to that of Northwestern Region given below.

STOCKHOLDERS, BOARD OF DIRECTORS, PRESIDENT
Vice-president (Northwestern Region)
General manager
Gen. Supt. transportation
Supt. of transportation
Supt. stations and transfers
Chief engineer maintenance of way
General superintendent of motive power
General storekeeper
General superintendents
Eng'rs maintenance of way
Supts. motive power
Division superintendents
Traffic manager
Freight traffic manager
Ass't freight traffic manager
General freight agent
Ass't g.f.a.
Freight claim agent
Foreign freight agent
Passenger traffic manager
General passenger agent
Ass't g.p.a.
General baggage agent
Supt. restaurant service
Assistant treasurer
Purchasing agent
Ass't to purchasing agent
Real estate agent
Ass't to real estate agent
Accountant
Vice-president (Southwestern Region)
Operating department
Traffic department
Treasury, purchasing, real estate, and accounting.
Organization similar to that of Northwestern Region, given below.

been found best to organize a distinct *purchasing department,* usually directly subordinate to a vice president of the company, and hence coördinate with the other departments of the service. The purchasing agent is at the head of the department, and subordinate to him are the storekeepers, who distribute the supplies upon the presentation of properly authorized requisitions. Formerly it was customary for each department to purchase its own supplies, but the plan of having all purchases made by one officer is more economical, and has been generally adopted.

Every railroad company is the owner of a large amount of *real estate,* the purchases and transfers of which are in charge of a real estate agent and a chief conveyancer, subordinate either to the president or to a vice president of the company. Some of the western railroads received large grants of public land, the sale of which is put in charge of a special department.

The business of insuring the buildings of the company against losses from fire, whether by the plan of company insurance or by means of fire insurance companies, is sometimes, although not often, in charge of an *insurance department,* with a superintendent at the head.

Many railroad corporations have *relief departments* to provide aid for disabled or sick employees. With some companies the relief consists only in maintaining hospitals, while others have fully organized relief departments, to which the employees of the company are expected to belong and from which the members receive financial aid in case of sickness or accident. The family or heir is paid a stipulated benefit upon the death of a member. These departments are supported mainly by the employees, but in part by the company, which bears the expenses and assumes the risks of administration.

The organization of a modern railroad corporation seems complicated and detailed, but the main branches and sub-

ORGANIZATION OF THE NEW JERSEY DIVISION OF THE PENNSYLVANIA RAILROAD

GENERAL SUPERINTENDENT, NEW JERSEY DIVISION

- Supt. of motive power
  - Asst. eng'r of motive power
  - Asst. eng'r of floating equipment
  - Master mechanic and asst. (division shops at Trenton)
- Principal asst. eng'r
- Superintendent of Manhattan Division
  - Master mechanic
  - Division operator
  - Trainmaster
  - Road foreman of engines
  - Division engineer
- Supt. of New York division
  - Assistant Superintendent
  - Master mechanic
    - Asst. master mechanic
    - Engine house foremen
    - Foremen of car inspectors
  - Division operator
    - Asst. division operator
    - Op'tors (teleg., teleph., sig'l)
    - Linemen
  - Trainmasters
    - Asst. trainmasters
    - Station masters
    - Asst. station masters
    - Pass. and freight conductors
    - Pass. and freight brakemen
    - Baggagemen
    - General yard masters
    - Yard masters
    - Switch tenders
  - Road foreman of engines
    - Asst. rd. foremen of engines
    - Enginemen
    - Firemen
  - Division engineer
    - Master carpenters
    - Supervisor of signals
    - Supervisors
      - Track foremen
- Supt. of Trenton div.
  - Master mechanic
  - Division operator
  - Trainmaster
  - Road foreman of engines
  - Division engineer
  - Asst. supt. of Delaware and Raritan Canal
- Supt. of the Atlantic and the Camden terminal division
  - Master mechanic
  - Division operator
  - Trainmaster
  - Road foreman of engines
  - Divisoin engineer
  - Asst. supt. of ferries

divisions are not many and not hard to hold in mind. The foregoing account of the several departments can be made more concrete by studying the organization of any large railroad company. The organization of the Illinois Central

and Pennsylvania Railroads are here given in outline, but there are others equally typical which the student might study to advantage. The best organization to study is that of the railroad whose offices are nearest at hand.

The diagrams on pages 242-246 show the main departments and the principal subdivisions to be found in the organization of all large railroad companies. The lines of authority from the top to the bottom of the service and of responsibility from the bottom to the top are shown for each part of the organization.

The Pennsylvania System, being larger than the Illinois Central, with heavier traffic and more miles of track, has a larger and more complex organization. The various departments of the system are under the direction of "system officers." For the purpose of maintaining closer executive supervision the system is divided into four regions, each under the direction of a vice-president, who has the same general powers over a region that the president has over the entire system. The chief operating officer of each region is the general manager. The Eastern Region is divided into five grand divisions, the Central Region into five, the Northwestern Region into three and the Southwestern Region into two. Each grand division is under the control of a general superintendent, and each is broken up into divisions, with division superintendents in charge. The organization of the New Jersey Grand Division of the Eastern Region is shown in the diagram on page 248, and the details of the organization of a single division are also indicated.

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The Official Guide of the Railways and Steam Navigation Lines of the United States gives a list of the principal officers of each company, and thus indicates the organization of each company.

CHAPTER XVI

THE ACCOUNTS AND STATISTICS OF THE RAILROAD SERVICE

The usefulness of railroad accounts, 250. The materials of railroad accounts and statistics, 251. The comptroller's reports, 252. Annual report of the president, 252. The income statement, 253. The profit and loss account, 256. The general balance sheet, 257. The need for accuracy and uniformity in railroad accounts, 258. Government regulation of railroad accounting, 259. Five leading sources of railroad statistics, 262. Suggested extensions of the scope of transportation statistics, 265. References, 268.

CAREFUL accounting is essential to an efficient performance of the railroad service, and a general understanding of railway accounts is necessary to an intelligent interpretation, by the student or the investor, of the financial and physical condition of a particular railroad company or system. In the administration of every large business enterprise, the directors and officials depend upon the accounts for the information upon which to act; and in the railway corporation especially, whose activities are scattered over a wide territory and are carried on in distinct departments each employing a large force of men, it is necessary that those responsible for the policy of the company and for close supervision of the several branches of the service should be kept fully informed regarding the property, the receipts and expenditures, the needs, the deficiencies, and the accomplishments of each department. In the accounts as now kept by many railroad companies is focused a clear picture of the condition of the physical property of different

kinds, of the extent of the several classes of services being performed, of the receipts and expenditures connected with the service, and the changes taking place month by month or year by year in the property, the services, and the finances of the company.

The *comptroller* is the chief accounting officer of the railroad, reporting in some companies directly to the president, and in others to a vice president who has general supervision of the accounting department. The chief assistants of the comptroller are the several auditors, each having charge of a certain class of accounts. Usually the accounts are classified as follows: merchandise, coal and coke, passenger, miscellaneous (mail, express, etc.) and disbursements, and the title of the auditor corresponds to the particular group of accounts of which he has charge. The figures regarding traffic, receipts and expenditures are compiled from the waybills, tickets, reports, vouchers, and other papers sent to the offices of the auditors, where they are all scrutinized, checked up, and carefully recorded.

The records of car movements and of train and engine mileage are kept by the car accountants, who are usually subject to the general superintendents in the operating or transportation department. In this general department, likewise, are the engineers in charge of construction, maintenance of way, and equipment, whose reports contain the statistics regarding the physical property. The statistics of train, car, and locomotive performance are worked up in detail by the several departments having charge of the performance. The comptroller gathers these statistics from the different officials, and makes such compilations and tabulations as may be needed. Ordinarily, the auditing department does not verify the traffic and operating statistics, unless some evident error suggests the necessity for a test. The statistics of the cost of handling freight traffic per ton per mile are worked up in the accounting department by charging

to the freight and passenger services respectively such expenses as can be thus classified, and by dividing between the two services such expenses as are common to both, sometimes according to the earnings and sometimes according to the locomotive or train mileage of the freight and passenger departments. Different companies compute statistics of ton-mile cost by dissimilar rules, and such statistics, consequently, have little value for purposes of comparison.

From the detailed accounts kept by the accounting department, concise reports are prepared monthly and yearly. About the 25th of each month the books are written up and posted for all classes of transactions carried on during the previous month. Then a summarized account for that month is prepared, covering the earnings from each source, and the expenditures for operating expenses, taxes, rentals, improvements, construction, and equipment. This account contains a large number of entries. The operating expenses are divided into eight general and 196 primary accounts, and operating revenues into four general and 39 primary accounts. Expenditures for new construction and equipment cover 62 entries.

From the proof-sheets of this account is prepared the comptroller's monthly report, which includes a statement of the gross earnings, operating expenses, net earnings, improvements, construction and equipment, and also contains such statistical information as may be desired by the operating and executive departments—earnings and expenses per mile of road, per passenger and freight train mile, etc.

The accounts covering the business of the year are summarized and discussed in the annual report of the president of the railroad company to its stockholders. This report, in the case of a large company, necessarily contains considerable detail and covers many subjects. The financial affairs of the company are presented in three important statements: the income statement, showing the revenues and

expenditures for the year; the profit and loss account in which the profit or loss of the current year is consolidated with the surplus or deficit of preceding years; and the general balance sheet, which shows the total assets and liabilities of the company.

These three statements in the annual report are usually presented in the same form as is required by the Interstate Commerce Commission in similar statements made to that body. The subdivisions contained in the income statement as prescribed by the Interstate Commerce Commission since June 30, 1914, are as follows:

OPERATING INCOME:

Railway operating revenues
Railway operating expenses
Net revenue from railway operations
Railway tax accruals
Uncollectible railway revenues
Railway operating income
Revenues from miscellaneous operations
Expenses of miscellaneous operations
Net revenue from miscellaneous operations
Taxes on miscellaneous operating property
Miscellaneous operating income
Total operating income

NONOPERATING INCOME:

Hire of freight cars—Cr. balance
Rent from locomotives
Rent from passenger train cars
Rent from floating equipment
Rent from work equipment
Joint facility rent
Income from lease of road
Miscellaneous rent income
Miscellaneous nonoperating physical property
Separately operated properties—profit

Dividend income
Income from funded securities
Income from unfunded securities and accounts
Income from sinking and other reserve funds
Release of premiums on funded debt
Contributions from other companies
Miscellaneous income
Total nonoperating income
Gross income

DEDUCTIONS FROM GROSS INCOME:

Hire of freight cars—Dr. balance.
Rent for locomotives
Rent for passenger train cars
Rent for floating equipment
Rent for work equipment
Joint facility rents
Rent for leased roads
Miscellaneous rents
Miscellaneous tax accruals
Separately operated properties—loss
Interest on funded debt
Interest on unfunded debt
Amortization of discount on funded debt
Maintenance of investment organization
Income transferred to other companies
Miscellaneous income charges
Total deductions from gross income
Net income

DISPOSITION OF NET INCOME:

Income applied to sinking and other reserve funds
Dividend appropriations of income
Income appropriated for investment in physical property
Stock discount extinguished through income
Miscellaneous appropriations of income
Total appropriations
Income balance transferred to credit of profit and loss

When the income statement is given in this form in the annual report of the president an analysis of the operating revenues and expenses is presented in other tables in the report. In the reports of some companies, however, the income statement itself, instead of adhering to the form prescribed by the Interstate Commerce Commission, contains a brief analysis of revenues and expenses. Occasionally the statement may have the following form:

INCOME ACCOUNT

Dr.	*Cr.*
OPERATING EXPENSES	REVENUES
Maintenance of way and structures	Freight revenues
Maintenance of equipment	Passenger revenues
Traffic expenses	Excess baggage revenues
Transportation expenses	Mail revenues
General expenses	Express revenues
	Other passenger train revenues
TAXES	Switching revenues
RENTS PAID UNDER INCOME ACCOUNT	Special service train revenues
	Other freight-train revenues
HIRE OF EQUIPMENT	Revenue from operations other than transportation
MISCELLANEOUS INCOME CHARGES	OTHER INCOME
	Interest and dividends on securities owned
INTEREST ON DEBT	Rents, etc.
BALANCE	
Being net income for the year, carried to profit and loss account	
Total	Total

The usual forms of the profit and loss account and of the general balance sheet are as follows:

PROFIT AND LOSS ACCOUNT

Dr.	*Cr.*
Surplus applied to reserve funds	Credit balance (at beginning of fiscal period)[1]
Dividend appropriations of surplus	Credit balance transferred from income[1]
Surplus appropriated for investment in physical property	Profit and loss on equipment sold
Stock discount extinguished through surplus	Delayed income credits
Debt discount extinguished through surplus	Unrefunded overcharges
Miscellaneous appropriation of surplus	Donations
Loss on retired road and equipment	Miscellaneous credits
Delayed income debits	
Miscellaneous debits	
Total	Total
	Balance (surplus) carried to general balance sheet[1]

[1] If a deficit instead of a surplus exists the item appears in the debit column.

GENERAL BALANCE SHEET

Assets	*Liabilities*
INVESTMENTS	STOCK
Road	Capital stock outstanding
Equipment	Premium on capital stock
Sinking funds	
Stocks, bonds, etc.	GOVERNMENTAL GRANTS
CURRENT ASSETS	LONG-TERM DEBT
Cash	Funded debt unmatured
Special deposits	Receiver's certificates
Materials and supplies	
Accounts receivable, etc.	CURRENT LIABILITIES
DEFERRED ASSETS	Loans and bills payable
Working fund advances	Interest matured unpaid
	Funded debt matured unpaid
UNADJUSTED DEBITS	Dividend matured unpaid, etc.
Rents paid in advance	DEFERRED LIABILITIES
Discount on capital stock	
Discount on funded debt	UNADJUSTED CREDITS
Securities issued or assumed, etc.	Tax liability
	Premium on funded debt
	Operating reserves
	Accrued depreciation, etc.
	PROFIT AND LOSS—SURPLUS
Total	Total

A part of the annual railroad report is usually devoted to an explanation and discussion by the president of the important changes during the year covered by the report as regards traffic and earnings, construction, improvements in track, structures and equipment, the stocks, bonds, dividends and securities of the company, the relation of the corporation to other companies, and such other subjects as are of special interest to the holders of the stocks and bonds.

The above tables should be used as an aid to the study of an annual report of some large railroad corporation.[1] If the report is a detailed, comprehensive, and systematic one, it will cover all the points contained in the tables; but there are many companies whose reports are incomplete, especially as regards the information concerning the physical condition of the property. The object of some reports is to make the best possible showing for the company rather than to give the most accurate and lucid account possible, but such reports upon critical examination will be seen to be incomplete.

As the public nature of the service of transportation becomes more clearly recognized and the difference between the duties of the quasi-public railway corporation and those of the strictly private corporation is being brought into greater prominence by the rapid growth in the size of the railroad systems and in the increasing tendency for the traffic of large sections of the country to pass under the control of a single management, the necessity for accuracy, completeness, and uniformity in railway accounts becomes stronger and more general. Public opinion does not justify a railroad corporation in making an inaccurate or otherwise misleading report for speculative purposes, and a company

[1] In studying a railroad report—and that is the only satisfactory text for the study of railroad accounts—the student will be assisted by the use of William E. Hooper's *Railroad Accounting.*

probably does itself more harm than good by putting out an inaccurate report.

The wisdom of uniformity in the accounts of all railroads is now as evident as is the necessity for accuracy, and the reasons are hardly less cogent. If all railroad reports are accurate, complete, and uniform, the directors and officials of each company can easily compare the results of their administrative policies with the results of those enforced by other companies. There is no stimulus to improvement equal to that which comes from comparison with others in the same calling or business. The investor, moreover, becomes able to act more intelligently when he can, either personally or by the aid of an expert accountant, judge of the merits and business efficiency of particular railroads with whose management he may not be familiar by contrasting its accounts with others of whose affairs he may have intimate knowledge or whose management is generally recognized to be sound and conservative. Likewise from the standpoint of public supervision of railroads, uniform accounting is equally necessary. The chief purpose of government oversight of transportation is to insure equity in charges, and the accounts kept by each company contain most of the information upon which a decision regarding the reasonableness of its charges must be based. Moreover, a charge by one company is frequently rendered equitable or inequitable by its relation to the charges exacted by other companies, and whatever facilitates accurate comparisons of the accounts of one company with those of other companies is an aid to the intelligent and effective supervision of railway management.

By the Hepburn Act of June 29, 1906, railroads engaged in interstate commerce were required to keep their accounts uniformly and as directed by the Interstate Commerce Commission. Long before the enactment of this law the necessity of securing uniformity of accounting had been

clearly perceived. In fact by section 20 of the act of February 4, 1887, "to regulate commerce" the commission had been given discretionary power of prescribing for railways "a uniform system of accounts and the manner in which accounts shall be kept," but the law did not give the commission definite authority to inspect and audit the accounts, and without that power the law could not be enforced. Before the enactment of the Hepburn law, however, there had been considerable progress made in securing uniformity in railway accounting because of the influence exerted by the Association of American Railway Accounting Officers, the Interstate Commerce Commission, and the annual convention of the National Association of Railway Commissioners of the States. The fact that the railroad companies were obliged by law to make detailed and elaborate reports to the Interstate Commerce Commission caused the companies to shape their accounts and reports according to the statistical requirements of the commission. The statistician of the Interstate Commerce Commission in conference with the accounting officers of the companies worked out the blanks to be filled in annually by the railroads, and those conferences as well as the requirements of the commission promoted the adoption of uniform methods. Both the Interstate Commerce Commission and the Association of American Railway Accounting Officers are represented in the annual convention of the National Association of Railway Commissioners, the statistician to the Interstate Commerce Commission and the president of the Accounting Officers Association being members of the standing committee on railroad statistics.

The State commissioners require annual statistical reports from the railroads covering the mileage and business done within their respective States, and the annual convention of the commissioners did much to give similarity

if not complete uniformity to their annual reports, and thus exercised an influence upon the railroad companies to adopt uniform methods of keeping their accounts.

The investigations of the Industrial Commission in 1898-1902 convinced that body of the desirability of government auditing of railway accounts, and it recommended to Congress the establishment of a permanent corps of expert auditors with complete authority, under the supervision of the Interstate Commerce Commission, to examine periodically the accounts of all railroad companies, whether operating or financial in their character, in order to secure publicity in respect of financial and operating facts. Such examinations for detection of violations of law were to be subject to provisions safeguarding confidential information similar to those prevailing in the case of the inspection of national banks.

Congress wisely decided to give the Interstate Commerce Commission full power to regulate the accounting practices of the railroads, and in the Hepburn Act authorized the commission to employ special agents and examiners, whose duty it would be to inspect and examine railway accounts and records and see that they were kept in accordance with prescribed forms. The law forbade carriers to keep any other accounts than those approved by the commission and provided for punishment by fine and imprisonment of anyone who neglected to observe the commission's rules. The fiscal year beginning July 1, 1907, was the first year in which steam railroads engaged in interstate commerce were required to keep their accounts in accordance with prescribed forms. A revised classification of accounts was put into effect by the commission on July 1, 1914. All railroads make uniform annual and monthly reports to the commission, and the annual reports of the railroad officials to the stockholders also conform to the accounting system established by the commission, except for occasional slight vari-

ations of the form in which certain statements are presented.

In making uniformity in accounting obligatory Congress did much to strengthen government supervision and regulation of railroad companies. Those who were opposed to extending the regulative authority of the Government over the management of railroads did not favor a law requiring the adoption of a uniform system of accounts, because, in order to make the law effective, it was necessary to provide for an inspection of corporate accounts by public officials, and that was thought by some railroad interests to be unwise. In practice, however, the law has worked extremely well. It has brought about a vast improvement in the accounting practices of the railroad companies, which has resulted in benefit to the companies themselves and to investors, and it has increased greatly the effectiveness of the work of the Interstate Commerce Commission.

Statistics of Railways

The statistics compiled in regard to railroads are detailed and voluminous, and necessarily so. Each company depends upon its statistical records and data for the information essential to the administration of its several departments; the National and State governments must be well informed concerning the railroads in order to legislate intelligently regarding public supervision and to enforce wisely the laws affecting the railways.

There are five general sources (besides many minor sources) whence one may secure statistical information regarding railroads. The annual reports of the companies give the data for each company separately. These reports are annually published, in an abbreviated form, in *Poor's Manual of Railroads,* which excellent volume also contains an analytical summary aggregating the statistics for all the

roads in the United States, and making comparisons with the figures for past years. Most of the States annually collect and publish statistics covering the roads within their respective boundaries; but while these local compilations are of value to the States in levying taxes and regulating transportation, they are not much consulted by the public generally, because the comprehensive statistics to be found in *Poor's Manual of Railroads* and in the publications of the National Government are more satisfactory for reference.

The national censuses of 1880 and 1890 covered the statistics of railroads and other transportation agencies, but the census of 1900 did not include the data regarding steam railroads. This omission was made because it was thought that the compilation of census statistics of railroads could do little more than duplicate the statistical work of the Interstate Commerce Commission. If there were no decennial volume to show the railroad progress from 1890 to 1900, it would be unfortunate; but the regular annual reports of the Interstate Commerce Commission compare the data for the current year with those for each of the preceding ten years.

The annual volume published by the Interstate Commerce Commission, entitled *Statistics of Railways in the United States,* is the most comprehensive and detailed work available, dealing with the operating and financial statistics of the railroads of the country. From the annual reports made by the railroads to the commission there are compiled and presented in this volume elaborate tables showing for each railroad, for the year covered by the report, the general balance sheet, income statement, and profit and loss statement, a detailed analysis of operating revenues and expenses, a statistical account of operations, and an itemized statement of the capitalization of the railroad and of its investments other than road and equipment. The tables

are divided according to the classification of railroads adopted by the commission. Class I roads, or those having annual operating revenues in excess of $1,000,000, are included in the first table, which is subdivided into three sections, a section being devoted to the railroads of each of the three great districts, the Eastern, Southern and Western. The reports for Class II and Class III railroads are subdivided in the same way, and their tables are followed by reports of lessor steam railway companies, a table showing intercorporate relationships of railways, and statistical reports of switching and terminal companies. The tables of the volumes are preceded by an analytical report by the statistician of the commission, in which are contained, together with the explanatory text, condensed tabulations summarizing the large tables and other statements describing the most important features of the railway business in the United States. In this introductory report by the statistician may usually be found all the figures desired by the general student of railroad transportation. A regrettable fact concerning this volume of statistics is that nearly two years elapse between the time of the collection of the material and the publication of the report. This defect is in a measure overcome by the fact that the commission publishes as soon as possible after the close of each month a statement of the total monthly earnings and expenses of railroads and also issues annually a statistical report of all Class I railroads.

Two bureaus maintained by the railroads publish at regular intervals important statistical and other information concerning the railways of the United States. The Bureau of Railway Economics, at Washington, puts out each month a statement of the revenues and expenses of steam roads of Class I, and also publishes at intervals various bulletins containing material of great value to the student of transportation. The Bureau of Railway News and Statistics at Chi-

cago publishes each year a number of *The Railway Library*, containing selections written by leading authorities in the field of transportation and a compilation of statistics of American and foreign railways. In the explanatory text accompanying the statistics an endeavor is made to present the attitude of the railroad managers in the various controversies growing out of regulation of railways by the Government.

Although the present statistics of transportation seem comprehensive, there are some regrettable omissions of desirable and valuable data. The most serious defect is the neglect to collect annual statistics of the business done by carriers by water along the seaboard, by telegraph companies, and by all corporations other than railroads engaged in the transportation of interstate commerce. In addition to collecting the statistics concerning railroads, the Interstate Commerce Commission should have the power and duty of gathering and publishing the statistics of inland navigation. As the statistician to the commission says in his report for 1900, "the jurisdiction of the commission must be extended to these agencies of transportation, so far at least as annual reports are concerned, before it is possible to render a comprehensive report upon interstate traffic." In order for Congress to act intelligently in making appropriations for rivers and harbors, and in regulating the business of the great telegraph companies, annual statistical compilations are indispensable. In some measure the need for information has been supplied by special census reports, by reports of members of the Corps of Engineers of the U. S. Army in charge of the work of river and harbor improvement, and by reports prepared by the Bureau of Foreign and Domestic Commerce in the Department of Commerce. In no case, however, do the compilations, with the exception of those of the census department, present an orderly statement of the domestic commerce on waterways; and the census re-

ports are not only made with great infrequency but are unavoidably defective and inaccurate. Systematic records and frequent reports on the part of carriers are the only basis for accurate government statistics, and it will not be possible for the Government to secure full and reliable statistics of interstate transportation until it requires all carriers engaged in that transportation to keep faithful records and make regular reports.

The statistics of railroad capital as now published are not complete, because only the nominal or face values of the stocks and bonds are given. As was explained in the chapter on Railway Capital, there is frequently a wide discrepancy between real and face values of railroad securities.[1] The English reports have a feature worth copying. They show, year by year, the increase in capital account that is real and the increase that is nominal or due to conversions and consolidations. It is impossible to tell at the present time from the general balance sheet of a railroad exactly how much has been spent on the construction of the road or the amounts contributed therefor by individuals and by the National, State and local governments. Since 1907, however, the Interstate Commerce Commission has required that the first item on the debit side of the general balance sheet show the investment in road and equipment, and as far as additions and betterments since that date are concerned, a trustworthy statement of the cost is available. Any discrepancy between the actual cost of improvements and the par value of securities issued for payment is now shown

[1] In response to a resolution of the United States Senate, as was stated above in Chapter VIII, the Interstate Commerce Commission made a report, February 24, 1903, comparing the par and market values of railroad securities for the year ending June 30, 1900. The report presents clearly the difficulties encountered in securing, even with only approximate accuracy, the market value of all the securities of American railroads. Although the report does not cover all securities, the data contained are instructive.

in the balance sheet as a premium or a discount on the securities disposed of.

The value of freight traffic statistics would be enhanced by giving separately the figures for intrastate and interstate traffic. Such a classification would be serviceable in connection with questions of taxation and State control. The railroad companies have nothing to gain by classifying State and interstate business separately, and, as it would involve some expense to them, they naturally would not favor going to the necessary labor and cost. It would, however, be comparatively easy for the companies to compile the statistics on this basis from the waybills.

Statistics of the ton-mileage of each of the leading commodities shipped by rail would be instructive both to the public and to the companies, but until less expensive methods of railway auditing have come into general use commodity ton-mileage statistics would involve more labor and expense than the Government would be justified in requiring the railroad companies to expend. The publication of such statistics year by year would show the localization of industries in various parts of the country, indicate the trend of traffic from one kind of commodity to another, and show the companies what kinds of traffic were developing slowly and what rapidly. Such information would assist the companies in their efforts to promote traffic, and would furnish the Government with data bearing upon the reasonableness of rates. The recent development of mechanical tabulating and computing devices has greatly reduced the cost of accounting and statistical work, and it would be possible for the railroad companies, without assuming any serious burden of expense, to enlarge very considerably the present scope of railway statistics.

The Department of Commerce established in 1913, as a result of the separation of the functions of the Department of Commerce and Labor created in 1903, has done some

excellent work in more thoroughly systematizing the compilation of the statistics of commerce and transportation, and if Congress would supply sufficient funds, much desirable information could be collected concerning branches of our commerce about which little that is definite and exact is at present known. The statistics of ocean trade, which are now confined to our international commerce, will, it is hoped, be made to include our coastwise maritime commerce. Statistics of inland navigation and of all transportation businesses should be compiled either by the Department of Commerce or by the Interstate Commerce Commission. It would probably be best to place the work of securing statistics of all transportation companies—rail and inland carriers by water—with the Interstate Commerce Commission, because it is probable that by so doing the published statistics of interstate traffic as a whole would be more systematic, more comprehensive, and better correlated than they would be if their collection was put in charge of two independent authorities.

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PART III

THE RAILROADS AND THE PUBLIC

CHAPTER XVII

INTERRAILWAY RELATIONS—RAILROAD COMPETITION AND AGREEMENTS TO MAINTAIN RATES

The public nature and the unity of the transportation service, 273. Railroad companies are coöperators and competitors, 274. Early interrailway relations, 275. Early arrangements for through traffic, 276. Interrailway rivalry; its beginnings, 277. The struggle for the Chicago-Atlantic traffic, 278. The rivalry of the Atlantic ports, 279. Early competition in the West and South, 280. Nature of railroad competition, 281. The railroad business one of "increasing returns," 283. The restraint of interrailway competition a necessity, 284. Coöperation or consolidation is the alternative, 284. Agreements to maintain rates, 284. The Saratoga Conference, 286.

RAILROAD corporations are creatures of the state, instituted to serve the public for the state and under its supervision. The service performed by the railroads has two characteristics of special significance: (1) It is of a *public nature,* and may be performed directly by the government or by means of an agent authorized by the state. Whether this service shall be conducted by the government or by its creatures is a question of expediency which is decided differently in different countries; but, in whichever way this question may be determined, the service as a whole, and in its several branches, has close relationship with the government. (2) Within each part of the service—railroad transportation, the mail service, the express business, etc.—there must be *unity of action* extending over wide areas. The several transportation agencies within a nation's territory must work together if the public is well served; indeed, an

international coöperation of carriers has been found advantageous. If the government directly conducts each branch of the service, unity of action within its boundaries is assured, and the question of coöperation becomes one of securing the proper international relations; but if the state delegates a branch of the service, as, for instance, railroad transportation, to a number of corporations, a large measure of coöperation among those companies is necessary.

The railroad service within the United States being performed by numerous corporations, these several organizations are brought into relationship with each other in two ways: as coöperators and as competitors. They are cooperators because a part at least of the persons and things each company transports moves over a wider territory than is served by the company's system of lines. All companies have more or less "through traffic"—that which they receive from other railroads or turn over to another connecting line. American railroads are rivals because in most sections of the country much of the traffic has the choice of more than one route. Even if a territorial grouping of systems, such as was suggested in the chapter on The Present Railroad System of the United States, were completely worked out, there would be much traffic inbound and outbound between the interior and seaboard of the country that could choose between the ports of two or more sections. The eastbound traffic from the Mississippi Valley, for instance, can leave by way of the Gulf, the southern Atlantic, the middle Atlantic, the New England, or the St. Lawrence ports. Likewise the westbound traffic from the middle section of the United States has the option of many routes. The nature and scope of interrailway competition will be discussed more fully in a later connection. It assumes many forms, some of which are less obvious than those just cited.

Such being the conditions under which the railroad companies perform their transportation services, an understand-

ing of interrailway arrangements is requisite to a clear knowledge of the relations, actual and ideal, of the railroads to the public they serve, and to the government from which they receive their authority to engage in the business of public carriage, and to which they are accountable for a proper performance of the service they have undertaken to render.

The extensive railroad systems of the present time are of comparatively recent growth. During the first two decades of railway history the lines controlled by even the larger companies were short, a road 200 miles in length being considered a long one. It was not until after 1850 that a length of 500 miles was reached by any system. The Illinois Central, constructed in the fifties to a length of 700 miles, was one of the longest roads in the world. The Pennsylvania, by construction and purchase, and the New York Central by consolidation, passed the 500-mile limit in the fifties; but it was not until after the Civil War that a length exceeding 1,000 miles was attained by any system. Before 1890 a maximum of 5,000 had been reached, and since then the process of consolidation has given each of several companies the ownership or control of more than 10,000 miles of road.

Interrailway arrangements for handling through passenger or freight traffic were but little developed during the first 25 years of railway construction. Each company, as far as possible, kept its rolling-stock on its own lines, and compelled passengers to change and freight to be transferred when the points of junction with other roads were reached. A traveler may now go from the Atlantic seaboard to St. Louis or even to San Francisco without change of cars, but as late as in the fifties he had to make seven changes in getting from the Atlantic to the Mississippi. The conditions under which the through freight and passenger traffic was conducted before interrailway facilities were developed are described in a statement made many years since

by the secretary of the New York Central. Speaking with reference to the situation before 1851 on the roads now composing the New York Central route, he said:

> We had ten roads between Albany and Buffalo. There was just about as much efficiency in operating ten roads as there would be in ten men trying to do a thing that one ought to do. Every board of directors had its own profit to make and its own schemes to advance. There was no obligation on the part of any one company to do anything for any other. Through lines of cars could be run only by very complicated and embarrassing arrangements. I can remember the time when conductors were changed at the end of each one of the roads of the old line between Buffalo and Albany. In some cases a ticket could not be bought through from Albany to Buffalo. The elements of usefulness and economy were very few. In regard to freight, there was no obligation on the part of any one of the roads to take a single pound of it from another. Except so far as they might agree with each other, it involved changing at each terminus.[1]

Frequent transfers were a deterrent to travel and a much more serious hindrance to freight traffic. The handling of freight several times *en route* consumed time, increased the liability of damage in transit, and made the costs of transportation so high as to restrict long-distance shipments mainly to nonperishable commodities of relatively high value. These obstacles to travel and freight traffic were removed in part by the consolidation of the short connecting lines, and to a greater extent by means of the express companies, "fast freight lines," and "palace car" companies that have already been described. The amalgamation of the short lines began in a small way in the first decade of railway development, but was not actively carried on until after

[1] *Report of Select Committee on Transportation Routes to the Seaboard* (Windom Report). "Evidence," 157. (Senate Rep. No. 307, 43 Cong., 1 sess., 1874.)

1850, or during the third and subsequent decades of the growth of American railways. The express companies date from the forties, the fast freight lines, or freight dispatch companies, from the fifties, and the sleeping, dining, and parlor car companies from the sixties. These companies were all separate from the railroad companies at the beginning, and the express and "palace car" companies have remained independent, but the freight dispatch companies, as has been noted, have with few exceptions become the cooperative or company freight lines, which are in reality a part of the freight traffic departments of the railroad companies.

These facilities for handling through or joint traffic established a greater degree of coöperation among connecting carriers and enhanced the ability of rival lines to compete for business free to move over more than one route. Indeed, the consolidation and coöperation of connecting roads so intensified competition as to give to the interrailway relations for the promotion or restriction of competition far greater prominence than is possessed by those relations which are concerned with arrangements for joint traffic.

The construction and consolidation of railroads in the fifties by which trunk lines several hundred miles in length were established increased the competition among carriers, especially for the traffic between the central West and the Atlantic seaboard. In the early fifties four lines—the New York Central, the Erie, the Pennsylvania, and the Baltimore and Ohio—were bidding for western business, the two former lines connecting the seaboard with Lake Erie, the latter two the seaboard with the Ohio River; and the intensity of this competition soon became a matter of concern to the companies. They were able, however, to keep their rivalry under fair control until about 1870.

The five years preceding the panic of 1873 were characterized by great activity and much speculation in business,

and this activity was especially manifest in railroad construction. New lines were projected both into new sections and into territory served by roads previously built. Some roads were constructed for the speculative purpose of being sold out by their builders to the old companies whose traffic was threatened. Although the subsequent development of the country has been such as to create a need for most of the roads built during this period and during the later periods of active railroad construction, the speculation in railroads that preceded the panic of 1873 was excessive and was one cause of the intense rivalry of the railways during the succeeding twenty years.

The contest was keenest among the railroads connecting the Mississippi Valley with the Atlantic. In 1869 the New York Central and the Pennsylvania secured control of the roads connecting their western termini—Buffalo and Pittsburgh—with Chicago, and a struggle at once ensued for the possession of the eastbound and westbound traffic between Chicago and the seaboard. In 1868 the rates from Chicago to New York were $1.88 per hundred pounds, first class, and 82 cents fourth class; but in 1869 a "rate war" carried the rates for a time to 25 cents a hundred for all classes. Such a low rate as that could not long be maintained without bankrupting the roads, and the charges were raised to a profitable basis within a few months. But the published rates on the through traffic were seldom the ones actually charged for any length of time. Rates fluctuated greatly and were secretly reduced for individual shippers whenever such action was thought to be necessary to prevent traffic from going by a rival route.

The situation in the territory of the trunk lines was made still more unsettled and uncontrollable in 1874 by the extension of the Baltimore and Ohio to Chicago, and the opening of the Grand Trunk route from Milwaukee *via* Detroit and Montreal to Portland. The New York Central and the

Pennsylvania tried to maintain rates, but the Grand Trunk, the Erie, and the Baltimore and Ohio each preferred to act independently. As soon as the Baltimore and Ohio reached Chicago it began by open and secret methods to divert traffic from the Pennsylvania lines. The Grand Trunk and the Erie, whose financial management was highly speculative, charged whatever rates the exigencies of competition suggested. By the latter part of 1875 the through rates on all the trunk lines were well-nigh demoralized. In December of that year a truce was agreed upon, but it proved but temporary. For eight months of 1876 a violent rate war prevailed, and the rates charged were often not sufficient to cover the costs of operating the trains. By the end of the year the finances of the roads had been so depleted that peace was a necessity, and in 1877 they succeeded in reaching an agreement to share the total through traffic according to stipulated percentages.

The north Atlantic ports reached by the trunk lines—Baltimore, Philadelphia, New York, and Boston—prospered or declined commercially according to the amount of traffic secured by the railroad of which the city was the terminus, and so the contest between the railroads was intensified by the struggles of rival cities. The merchants of New York thought the rates to and from the West should be the same for Philadelphia and Baltimore as for New York, and less for New York than for Boston; but the merchants of Boston, Philadelphia, and Baltimore thought otherwise. The unregulated competition of the trunk lines and the protracted rate wars were detrimental to the trade of New York, largely because the traffic that had previously moved by the Erie Canal, and thus to New York, was secured by the railroads and distributed among the other Atlantic ports. As long as the canal rates were considerably lower than the charges by rail the commercial superiority and progress of New York were assured; but the diversion of the canal busi-

ness to the railroads threatened to check the advance of the trade of the city. The New York Central tried to hold the trade of New York by meeting the rates of the ambitious and reckless rival lines that were striving to build up the trade of their termini. The situation of 1876 was almost as burdensome to the business interests of the several Atlantic seaports as it was to the railroad companies, and they welcomed the settlement of the rate war. The rival claims of the cities as to the rates were adjusted by a compromise which gave Boston the same export rates as New York, Philadelphia slightly lower rates, and Baltimore rates somewhat less than Philadelphia received. The "differential" rates that were first agreed upon gave Philadelphia as compared with New York two cents less a hundred pounds on all export and eastbound domestic freight. The corresponding Baltimore differential was three cents less a hundred. The domestic eastbound freight rates to Boston were higher than the rates to New York, the differentials per hundred pounds being 10 cents first class, six cents second class, and five cents for lower classes. There were westbound differentials on both domestic and import traffic, which were different from the eastbound differentials. This compromise was regarded by New York as a concession. The merchants of that city were not satisfied with the adjustment of the rates made at the beginning, nor has New York been satisfied with the differentials established by subsequent adjustments.

The competition among the railroads in the West and in the South, though less intense, was similar to that among those in the northeastern part of the United States. In the central West the most important lines converged at Chicago, with which point St. Louis, Kansas City, Omaha, and other cities had each been connected in 1870 or soon thereafter, by two or more rival routes. There were three lines between Chicago and St. Louis in 1870, and later others

were constructed. The through traffic of the western roads generally was eagerly contested for, and the rates fluctuated violently. In the Southern States the railroads ran from the interior regions of production radially to the ports of the Atlantic and Gulf seaboards and to the markets of the Northern States. There was competition among the railroads to secure as much business as possible for their respective ports, and an active general competition between the railroads and the numerous water routes. Traffic between the Northeastern and Southern States might be shipped coastwise or by rail; that between the States north of the Ohio River and those of the lower Mississippi Valley by the Mississippi and its tributaries or by the railroads; while the many streams of the South were highways much used in moving traffic to and from the seaboard. Under these conditions the maintenance of published rates on through rail traffic was impracticable until a way was found whereby the railroad and steamship companies could work together in making rates and dividing up the total business. A plan of united action was developed and inaugurated in 1875.

In order to understand why the railroad companies found such difficulty in maintaining their rates and why they carried their rivalry to such extremes, one needs to consider the nature of railway competition. The merchant or the man who has invested capital in a business from which the invested capital can be withdrawn without much loss will suspend his business temporarily or permanently if competition becomes so severe as to prevent him from earning profits. As President Hadley says:

> If Grocer A sells goods below cost, Grocer B need not follow him, but simply stop selling for the time. For (1) this involves no great present loss to B. When his receipts stop most of his expenses stop also. (2) It does involve a

present loss to A. If he is selling goods below cost, he loses more money the more business he does. (3) It cannot continue indefinitely. If A returns to paying prices, B can again compete. If A continues to do business at a loss, he will become bankrupt, and B will find the field clear again.[1]

The situation is very different with competing railroads. The railroad company cannot suspend business when competition forces down the rates, although the earnings may not yield any profits on the capital invested. This is so because fully three-fourths of the expenses will continue even if the railroad ceases to carry traffic. Very little of the capital invested in a railroad (and the same is true in a large measure of mining enterprises and the iron and steel industries) can be withdrawn. When put into a railroad, capital must secure an income from that form of investment, or become worthless; so if the company stops doing business, no interest on the investment can be obtained. But more than this, the railroad company's expenses for maintenance and repairs, and its losses from deterioration of equipment, roadbed, and structures do not stop when traffic is suspended. About all a railroad company can save by suspending all traffic is the expenses incurred in operating the trains. Such being the case, a railroad will not surrender its traffic to a rival, even though the earnings are so small as to leave no surplus to pay interest on capital. As long as the receipts from traffic will cover operating expenses and yield a small amount in excess to apply to the payment of expenses that must be met whether business is being carried on or not, the railroad will seek to hold its traffic against its competitors, or endeavor to secure the business being handled by its rivals.

Unless a railroad is exceptionally strong financially, it cannot carry a large share of its traffic at rates but little

[1] *Railroad Transportation*, 73.

above the costs of operating the trains, without becoming bankrupt; but the insolvent railway does not cease to do business. It will continue to be operated either by its former owners or by those who may purchase it, and while it remains in a condition of insolvency it is apt to seek competitive traffic more eagerly than its solvent rivals can do with safety. While bankrupt, the road is not obliged to pay interest or dividends on the capital invested, and while temporarily freed from that obligation there is a strong temptation to secure new patronage and additional tonnage. Insolvent roads have frequently yielded to this temptation and have made reckless wars upon their rivals, regardless of their obligations to treat the public without unjust discrimination and their competitors in accordance with business ethics.

But whether solvent or bankrupt, every railroad has a strong incentive to enlarge its business, because an increase in traffic does not correspondingly add to the expenses. After a railroad has been constructed, equipped, and put into operation many expenses are independent of the volume of traffic. Just as many expenses are not much lessened by a decrease in business or a suspension of operations, so are they enhanced to a comparatively small extent by an increase in the traffic. Until the point is reached when the facilities of a railroad are fully utilized, the greater the volume of business done the less the costs per unit of business (per passenger mile or ton mile), and the higher are the profits. The railroad business is one of increasing returns. A company with a traffic of 1,000,000 tons annually will much more than double its profits by carrying 2,000,000 tons, provided the extra business can be secured without reducing the rates, and if a considerable reduction in rates should be necessary to secure the additional traffic, the company will probably add to its profits by taking the extra tonnage.

Such being the nature of competition in railway affairs, some means for regulating its action are necessary if the service of railroad transportation is to be performed with profit to the companies having it in charge, and in accordance with the best interests of the public. If interrailway affairs were controlled by forces similar to those governing the business relations of persons engaged in agriculture or merchandising, their regulation by unrestrained competition might be satisfactory; but experience has clearly shown the absolute necessity for coöperation among carriers in the management of their competitive as well as their joint business. Unbridled competition is intolerable alike to the railroad companies and to the public, and must of necessity be checked. Whatever is ruinous to all parties must be stopped, and if the ruinous practices have no natural limits, an artificial one must be established.

If the competition among rival railways is to be restrained, they must either coöperate or consolidate. If they cannot agree upon, and work in accordance with, business methods that will effectually restrain the forces which lead to ruinous competition, they must consolidate under a single ownership or a common control. There is no other alternative.

An agreement for the restraint of competition may be for the accomplishment of one or more of three purposes: (1) The agreement may be to maintain rates, each party to the agreement being free to secure as much business and as large earnings as can be obtained at the rates sanctioned by the compact. (2) The agreement may divide the competitive traffic among the interested roads, according to stipulated percentages. (3) The agreement may allow each road to secure as much as possible of the competitive business, but require the earnings of all the lines from that traffic to be divided according to agreed ratios. The most effective method of restraining competition is by a division of the

field, each company being left free to furnish transportation in a section of country within which it is permitted to conduct its business unmolested by other railroads.

The first form of agreement is the easiest one to adopt, and was the one first employed by the railroads to regulate their competition. The second and third forms of agreements are called pooling, and for many years pooling arrangements were a part of all the coöperative agreements of rival railroads. A division of the field can scarcely be accomplished to much extent by formal agreements, but must come about mainly as the result of the growth of large systems of roads. As was noted in Chapter V, there has been a tendency toward the grouping of railroads in the United States in such a way that particular interests might secure more or less complete control of the traffic in certain sections of the country.

When competition for long-distance traffic became active in the early fifties, the necessity for agreements to prevent the cutting of rates secretly and to secure stability in charges became apparent. In the report of the Pennsylvania Railroad in 1855, the president, J. Edgar Thomson, stated that "with a view to agreeing upon general principles which should govern railroad companies in competing for the same traffic and preventing ruinous competition, a free interchange of opinions took place during the past year between the officers of the four leading East and West lines, and also with those of their Western connections." The traffic for which this "ruinous competition" was then being indulged in was quite as much the westbound passenger business as the eastbound freight tonnage. Later the freight business became the main object of competition.

This conference did not secure harmonious action. In 1857 the New York Central and the Erie engaged in a severe struggle for control of the passenger travel between New York and Lake Erie. This struggle was followed by

an agreement signed by the presidents of the four trunk lines "for the purpose," as President Thomson stated in his report of 1858, "of agreeing upon remunerative rates, abolishing injudicious practices, and effecting a harmony of purpose conducive to the mutual advantage of the railway interest and the public." The agreement, among other things, named a person to act as umpire for the adjustment of differences among the parties to the compact.

Agreements similar to this were entered into frequently and openly by the railroad companies in different parts of the United States during the fifties and sixties, the officers who convened to make the agreements usually being the general freight agents. However, these pledges of the officers of the competing lines failed to secure stable rates. Sudden and extreme fluctuation characterized competitive charges, and it was evident that some more effective arrangement was needed.

In the summer of 1874 Commodore Vanderbilt, the president of the New York Central, conferred with representatives of the Pennsylvania and Erie Railroads at Saratoga, and they agreed upon a board of arbitration to settle disputes among their roads. Their idea was to agree upon rates as formerly and also to establish a central board with power "to establish rules and tariffs which should be binding upon the various companies, and this central board it was intended should be clothed with sufficient powers to hold the companies firmly. It was an attempt to substitute arbitration among railroads for a condition of perpetual warfare." [1]

Whether this plan of coöperation would have succeeded had it been given a trial is doubtful; but it was not given a trial because it was not acceptable to the Baltimore and Ohio and the Grand Trunk, the two trunk lines that had just

[1] Charles Francis Adams, *Railroads: Their Origin and Problems*, 153.

secured Chicago connections and were desirous of securing the maximum amount of competitive traffic. The Saratoga Conference raised a great storm of popular opposition to the railroads, because the public thought the railroad presidents had conspired to create an oppressive monopoly; but it had no effect in checking interrailway contests. The disastrous rate wars of 1875 and 1876 followed.

The agreements to maintain rates failed, because there was no authority to enforce their observance, and the incentives to break the contract were always strong. The rates were decided upon by the higher officials of the companies, and they or their representatives agreed to maintain the rates thus established; but as soon as any company suspected another of violating the agreement, it would authorize its subordinate officials or the soliciting agents "to do as others are doing or supposed to be doing." Railway managers saw clearly that the only way to maintain rates upon traffic for which several independent railroads were competing was to remove the inducement to cut the rates. They sought to accomplish this by means of pooling.

CHAPTER XVIII

INTERRAILWAY RELATIONS (*Continued*)—POOLS AND TRAFFIC ASSOCIATIONS

Definition of pooling, 288. Description of traffic and money pools, 288. The beginning of railroad pooling, 290. Pooling in the West, 291. The traffic association and the pool distinguished, 292. Pools in the South, 292. Early agreements in trunk line territory, 294. The trunk line pool and the Joint Executive Committee, 296. The situation as regards railroad pooling in 1887, 298. Pooling prohibited by the Interstate Commerce Act, 299. Pooling contracts were illegal at common law, 300. Reorganization of pooling contracts to eliminate the pooling feature, 301.

THE main purpose of pooling was to prevent the cutting of rates and fares—the establishment of conditions that would enable the railroads to enforce their agreements as to charges. The pools were agreements among railroads whereby their competitive traffic or the receipts from that traffic were divided among the companies according to stipulated ratios. Arrangements for the division of the business were called traffic pools, those for the distribution of the receipts money pools.

The arrangement effected by a freight-traffic pool is theoretically simple. The roads that have been competing for some time for traffic free to choose its route observe what share of the total traffic, under normal and peaceful conditions of rivalry, is carried by each line, and make an agreement guaranteeing that each road shall carry during the period of the contract the percentage of the total tonnage to which past experience has shown the road to be entitled.

If a road while a member of the pool does not receive its stipulated share of the total tonnage, the organization having the management of the pool in charge sees that tonnage is diverted from the roads receiving more than their allotted percentage to the line having a tonnage deficit. In order to make a traffic pool effective, the railroad companies, instead of the shippers, must determine the route by which a part of the traffic shall move. Usually shippers object to surrendering their right to determine the route by which their goods shall be taken, and, although the companies always receive a considerable tonnage of unrouted shipments, the railroads have more often preferred to allow each road in the pool to accept and forward the tonnage offered to it, and require the railroads hauling more than their allotted share of the traffic to pay a stipulated portion of the receipts from the excess to those roads hauling less than their allotted percentage. The payment of the sum is insured by requiring each railroad to deposit in a common fund a fixed percentage of its entire receipts on pooled traffic, from which fund the differences are adjusted at regular intervals.

Instead of attempting to divide the traffic, competing railroads may allow each road to haul all the tonnage it can secure, and divide among themselves, according to a stipulated ratio, the receipts from the competitive business, that is, establish a money pool. A pool of this sort is applicable to passenger business as well as to freight traffic. In pooling their earnings from competitive business, it is customary for each road to retain a third or a half of the revenue it derives from that traffic, and to turn the remaining two-thirds or half into the pool (or joint purse, as it is called in England), to be distributed periodically among the pooling lines in accordance with the percentages stipulated in the agreement. Each road is allowed to retain a part of the earnings to cover the actual expense of con-

ducting the transportation affected by the pool, and the percentage withheld from the joint purse must be small enough to remove the inducement to attempt to capture traffic from competitors.

By arrangements such as may be established by the pooling of traffic or earnings it is possible to prevent a railroad from deriving immediate profit from secretly cutting rates or openly engaging in a rate war; but the temptation for a road to increase its percentage of the total traffic carried by all lines is not wholly removed. The pooling contracts are for a short period of a year, or, at most, a few years, and every road desires to secure as large a tonnage as possible in order that it may share more largely in the subsequent allotment of percentages. The pool does not altogether destroy competition. Even if published rates are fully maintained, there is bound to be a rivalry in service, each road endeavoring to secure the largest possible volume of business.

President Hadley states in his *Railroad Transportation* that "the earliest railroad pools were probably developed in New England, but they were on a small scale, and the whole thing was often so quietly done that their very existence was almost unsuspected." So little is known of the history of these New England pools it is probable that they were not important. The first pooling arrangement of much consequence was established in 1870 by the railroads connecting Chicago and Omaha—the Northwestern, the Rock Island, and the Burlington roads. These three lines, having about equal facilities for handling the traffic between Chicago and Omaha, agreed that each route should have a third of the business. The charges by all lines were to be the same, and the traffic, without solicitation by the companies, was to take whichever route the shippers might decide to patronize. According to the first agreement, each road was to retain 45 per cent of the receipts from the through passenger busi-

ness and 50 per cent of the earnings from the through freight traffic; the remainder of the revenues from this competitive business was to be shared equally by the three companies. This agreement was maintained successfully for 14 years, with the exception of a few months in the summer and early autumn of 1882, when a controversy regarding the distribution of freight brought on a rate war of a few months' duration. In 1884 the Chicago-Omaha pool gave way to a larger organization—the Western Freight Association.

Six years after the establishment of the Chicago-Omaha pool the Southwestern Railway Rate Association was formed to adjust the rates on traffic between Missouri River points and Chicago and St. Louis, and to distribute the earnings from that traffic among the several competing lines. One purpose of the association was to protect the grain-trade interests of Chicago and St. Louis from the consequences of unrestrained competition. The pooling agreement was similar to that of the Chicago-Omaha pool, except that there were more roads parties to the arrangement; but the operation of the larger association was not so successful. For a time the association acted as a clearing house for the settlement of balances among the roads.

In addition to these two pooling agreements, numerous others were entered into by the railroads of the Central and Western States in the seventies and eighties, some of the agreements being in force for only a short time, others for several years. The traffic between Chicago and Milwaukee on the east, and St. Paul and Minneapolis on the west, was regulated by the Northwestern Traffic Association; the field between Chicago, Milwaukee, and St. Louis on the east, and Omaha and Council Bluffs on the west, was occupied by the Western Freight Association; to the south of this was the Southwestern Railway Rate Association just referred to. Among the organizations having authority in the territory

west of the Missouri River were the Colorado Railway Association, the Colorado-Utah Association, the Pacific Coast Association, and the Transcontinental Association.

The Chicago-Omaha agreement entered into by the Northwestern, Rock Island, and Burlington Railroads in 1870 was simply to establish a pooling agreement; but the organizations or "associations" subsequently formed by competing railways in the West and other sections of the country had other purposes and activities, although the pooling of traffic or earnings was their main object. In the traffic associations the railways attempted to regulate all their interrelations. They fixed the rates on joint and competitive business, laid down rules regarding the solicitation of traffic, took measures to prevent fraud, determined the speed at which the fast passenger trains should be run, decided what kinds of tickets should be issued, and what privileges should be afforded or denied shippers. Until 1887 a pooling agreement was a regular feature of the organization of all traffic associations; from 1887 to 1920 pooling was illegal, but the traffic associations continued to exercise their other functions.

The traffic association was developed earliest in the States south of the Ohio and Potomac, where, in 1875, the Southern Railway and Steamship Association was formed under the masterful guidance of Albert Fink. The association grew out of pooling agreements, the first of which was entered into in December 1873 by the four roads connecting Atlanta, Ga., with the seaboard. The pool covered only the cotton business of the roads. The membership of the association comprised the railroads in Virginia, North and South Carolina, Georgia, Tennessee, and Alabama, and the steamship lines connecting those roads with Baltimore and the other north Atlantic seaports. This was one of the best organized and most effective traffic associations, and came later to include most of the territory east of the Mississippi

River and south of the Ohio and Potomac. In its plan of organization provision was made for an annual convention composed of one delegate from each constituent company. This body had legislative powers; the administrative functions were exercised by a general commissioner, an executive committee which after 1883 consisted of the managers of the principal lines, and a board of arbitrators. The general commissioner was given large powers, and this was one reason why the organization proved effective. The questions the commissioner could not settle were referred to the executive committee, which had jurisdiction over the joint and competitive traffic. Its action had to be unanimous, and in case of a disagreement on any subject, that question was referred to the board of arbitrators for adjustment. The rates on competitive traffic were determined by the executive committee, which also apportioned the traffic among the competing roads. Each road carried the traffic coming to its lines. If any road hauled a tonnage in excess of its allotment it was allowed to retain one-half a cent per ton per mile on the excess, to cover the expense of carriage; and the remainder was to be paid to the commissioner who divided it among the roads carrying less than their allotted share. At first the railroad companies failed to live up to this agreement, but in 1877 the device was adopted of requiring each company in the pool to deposit 20 per cent of its revenue on each shipment of pooled business with the commissioner, to constitute a fund for the adjustment of balances. This plan proved highly successful. Each railroad carrying less than its share of traffic was paid promptly each month from the deposits made by the roads having an excess of tonnage, and whatever remained of the 20 per cent after the adjustments were made was returned to the depositing companies.

Naturally the most difficult problems the association had to deal with were the allotments of traffic among competi-

tors. These allotments covered different kinds of traffic, and affected several groups of roads and steamship lines, which were frequently changing their relative efficiency as carriers. Allotments were made annually, and usually were accepted by the interested companies, but not always, and local rate wars occurred from time to time. The local troubles, however, did not disrupt the association, because the withdrawal of a member did not terminate the agreement among the others, and because the commissioner was given such power to discipline a recalcitrant line that he was usually able to bring it into subordination. Competition was active among the pooled roads, and between the carriers in the pool and those outside. Each member strove to increase its traffic in order to make as large a showing as possible when the annual allotments were made. The rates fixed by the association on most of the business into and out of the territory served by its members were influenced by outside competition. The rates between the north Atlantic ports and the South were affected by the charges made by sailing vessels. At that time the Mississippi River had a considerable regulative influence on rail rates. Furthermore, then, as now, every city was zealous in securing as liberal rates as possible as compared with its rivals. If any industrial or commercial center within the territory of the pooled lines were charged higher rates than its rivals without that territory, the city and the roads serving it were liable to lose their business, and care was taken to guard against such a result.

The competition among the railroads was heaviest in the territory between the central West and the north Atlantic seaboard, and greater difficulty was experienced there than in the West or South in making effective pooling agreements. The first agreement affecting competitive traffic in this field was one between the railroads mining and carrying most of the anthracite coal. In 1872 they entered into a

contract restricting the amount of coal to be mined, and dividing up the production and traffic according to fixed ratios. This agreement lasted for four years, and was followed by others from 1878 on, which did something to steady the prices and output of coal, but which never fully accomplished the purpose.

Another, and a decidedly objectionable, plan for regulating the competitive relations of the trunk lines was to make certain large shippers the "eveners" of the traffic of the rival roads. In applying this method of distributing business, the railroads first decided what share of the total tonnage should go to each line, and then arranged with large shippers to allot their freight from time to time among the several roads in such a way as to enable each route to secure its stipulated share of the total of all competitive traffic. The first eveners were the shippers of live stock from Chicago to the East, with whom the railroad companies made an agreement in 1875. The Standard Oil Company was another evener. These eveners were remunerated for their trouble by being given better rates than other shippers. The large shipper was favored at the expense of the smaller ones, and the discrimination was most unjust. The large shippers who acted as eveners were quick to take advantage of the situation. The railroad companies, being unable to restrain competition, were willing to pay a large price for a peaceful division of traffic, and the concessions in rates demanded and received by the large shippers were excessive and ruinous to other shippers. In 1879—that is, when the trunk lines succeeded in pooling their eastbound business—the evener plan of distributing traffic was terminated. That, however, did not end the large shipper's opportunity to secure special favors. The problem of personal discrimination remained, and unfortunately existed for many years.

Three years of strife, much of which consisted of violent rate wars, followed the failure of the Saratoga Conference;

then, in 1877, the necessitous condition of the trunk lines and the pressure of the commercial interests affected by the struggle caused the roads serving the north Atlantic ports to unite upon a pooling arrangement. Albert Fink was called to their assistance, and in July an organization of the four trunk lines from the seaboard to Lake Erie and the Ohio River was effected. In December the roads between Pittsburgh, Erie, and Buffalo on the east, and Chicago and St. Louis on the west (what is now called Central Freight Association territory) established a like organization. The organization in both cases included an executive committee, in which each road subject to the agreement was represented. Albert Fink was chairman of the executive committee of the Trunk Line Association.

Pooling was the main purpose of each organization. The apportionment of the westbound traffic from New York was made in 1877; the New York Central and Erie were each to have 33 per cent, the Pennsylvania 25 per cent, and the Baltimore and Ohio 9 per cent. The pooling of the traffic eastward from Chicago was a more difficult task, and was not accomplished until 1879. In that year Albert Fink further developed the organization of the railroads between the central West and the seaboard by securing the establishment of the Joint Executive Committee, composed of representatives of the trunk lines from the seaboard to the Ohio and Lake Erie, and of the lines in the Central Traffic Association territory. As chairman of the Joint Executive Committee, Mr. Fink did not have so much authority as he had as commissioner of the Southern Railway and Steamship Association.

The Joint Executive Committee endeavored to accomplish three things: (1) To fix the rates (or the "differentials") which Philadelphia and Baltimore should have as compared with New York and Boston on the Western business; (2) to apportion the total competitive traffic

among the interested roads; (3) to have supervision over the joint traffic shared by the roads east and west of Buffalo, Erie, and Pittsburgh.

The first of these problems proved a most difficult one, and was never settled to the satisfaction of all parties. The compromise arrangement, described on page 284, probably dealt with the question as fairly as was possible. Indeed, Albert Fink's report on "Adjustment of Railroad Transportation Rates," made in 1882, showed clearly that the rates on export traffic from the central West to each of the north Atlantic ports were at that time, and must be, a part of the through rates from the central West to Liverpool and Europe, and that the rail charges to Philadelphia and Baltimore were as much less than those to New York as the ocean rates from Philadelphia and Baltimore to Europe were greater than from New York to Europe. The legislature of New York State manifested its disapproval of the formation of the Joint Executive Committee, and of its settlement of the question of differential rates, by the appointment of a committee of investigation—the Hepburn Committee—whose investigations and report added much to public information regarding the railway problem in general, although it threw little light on the question of the effect of railway pooling on the business of New York State and New York City. The New York Central Railroad, being dissatisfied with the differential rates, carried on a rate war in 1881, and another in 1884.

The second duty assigned the Joint Executive Committee—the pooling of eastbound traffic—was performed in 1879. To enforce the pooling agreements, and to supervise the business arrangements and rates affecting the joint business of the eastern lines and their western connections, a progressively efficient organization was developed. As reconstructed in 1885, the traffic association

of which the trunk lines were members provided for the division of competitive traffic and the monthly settlement of balances by drafts upon a deposit made with a trustee. The governing body of the association was a committee of the presidents of the seven roads that were members of the organization. The presidents' committee selected an executive committee, the chairman of which was the chief administrative officer of the association. There were also freight and passenger committees and a permanent arbitrator to whom was referred, for final determination, questions concerning which the members of the association could not agree. As thus constituted, the organization gave promise of being able to maintain orderly relations among the carriers competing for the vast traffic moving east and west through the north Atlantic ports; but in 1887 the vitality of the organization was largely impaired by the law making illegal the pooling of freight traffic.

In the foregoing paragraphs an account has been given of the more important but not of all the railway pools that were organized in the seventies and eighties. In 1887 practically all the roads having a large volume of competitive traffic were members of some pooling organization. The interrailway relations were not altogether satisfactory, but the conditions, at least as far as the carriers were concerned, were improving. Progress was being made in regulating rate fluctuations and the consequent discriminations. It does not seem, moreover, that the pools were a detriment to the public. Although the rival railroads made their rates by joint action, and united to maintain the charges thus agreed upon, they were not able to control the industrial forces to which transportation charges are in a large measure subject. Nor was it possible for the railroads by means of rate agreements and pools to prevent the ocean, the large rivers, and the

Great Lakes from exercising a wide and effective influence on rail rates. From 1870, when pooling began, to 1887, when it was prohibited by law, the average receipts of the railroads of the United States for hauling a ton of freight one mile declined from nearly two cents (in gold) to about one cent; in other words, the average ton-mile earnings in 1887 were only a little more than half those of 1870. Charges did not decrease because of pools, but the pools did not prevent their decline.

Nevertheless, the public was strongly opposed to pools. The people generally thought that pooling enabled the railroads to establish monopoly conditions in transportation; indeed, the public opposition to railway practices (some of which were not objectionable) during the seventies and eighties centered against pooling. It cannot be shown, however, that pooling enabled the railroads to fix their charges at will, and it is clear enough that discrimination in rates and fares rather than the coöperation of competing railroads was the central abuse.

Section 5 of the Interstate Commerce Act, passed by Congress in 1887, declared:

> That it shall be unlawful for any common carrier subject to the provisions of this act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different and competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid, each day of its continuance shall be deemed a separate offense.

Previous to the passage of this law, similar action had been taken by several of the States, particularly by those in the central West, where the necessity for reforming the methods of railway management was most keenly

felt, and this antipooling section of the national act was demanded by the members of the House of Representatives from the South and West. The Senate was not in favor of prohibiting pooling, but the House of Representatives insisted upon its being done.

In a certain sense pooling contracts had never been legal. The railroad companies did not commit an offense by entering into a pooling agreement, but the contracts thus made could not be enforced by legal action, because the courts regarded them as being in restraint of trade. It is a general principle of common law that contracts in restraint of trade are void because they are in conflict with public policy. The sense in which pooling agreements were illegal before 1887 was clearly stated by Judge Cooley, who said:

> A contract may be illegal in the sense that it is forbidden by a law which imposes some penalty for entering into it; or it may be illegal because, though not forbidden, it is considered to be of an injurious and demoralizing tendency, and therefore the law will not favor it, but will refuse to lend its aid in its enforcement. If a contract is only illegal in this last sense, parties are at perfect liberty to enter into it if they please, but performance of its conditions must be entirely voluntary.

Not being enforceable by legal procedure, the strength of the pooling agreement depended upon the honor of the members to the contract and upon the successful imposition of fines for a violation of its terms. Large use was made of fines to enforce the agreements, the collection of the fines being secured by requiring members to keep a considerable deposit in the pool. It is thought by many persons that railway pooling has never been given a thorough test in this country, because of the extra legal character of the contracts; but whether the pooling

agreements would really have been more effective had they been sanctioned by law is uncertain. The pool was an agency by which the railroads sought to coöperate; indeed, it was in many respects the medium by which the rival companies sought to arbitrate their conflicting interests, and it is doubtful whether contracts for the promotion of those ends would have gained much strength from the sanctions and penalties of the law.

The prohibition of pooling in 1887 compelled a reorganization of traffic associations, but the necessity for cooperation required the continuance of the associations. The trunk lines signed new articles of agreement a few days after the Interstate Commerce law went into effect, "for the purpose of facilitating the transaction and interchange of business with each other and with their connecting lines." The Grand Trunk Railway was not a party to this agreement, and a serious rate war followed, the result of which was a new agreement in 1889, at which time the Grand Trunk became a member of the Trunk Line Association.

The Southern Railway and Steamship Association eliminated the pooling part of its organization, and continued to exist. By means of fines it was able to prevent serious rate disturbances until the business depression of 1893 came, when the struggle for traffic became so intense that the association was unable to control the action of its members, and the organization was terminated. Two years later the Southern States Freight Association was formed.

Rate wars prevailed generally west of Chicago in 1887 and 1888, and the railroad companies had great difficulty in forming organizations strong enough to prevent rate cutting and retaliation. The various associations that had existed previous to the prohibition of pooling were reorganized, and, in addition to the local bodies, the presidents of the interested roads, early in 1889, organized the Inter-

state Commerce Railway Association, with the hope of exercising an effective control throughout the entire territory west of Chicago, with the exception of that served only by the Pacific roads and the international lines. This organization was a failure, as was also one which succeeded it, and it was not until January 1891, when the Western Traffic Association was formed, that the railroads composing the several traffic organizations west and southwest of Chicago were able to coöperate with any degree of success. The Western Traffic Association did not supplant the smaller organizations, but federated them by being a court of appeal in matters of rates and in other controversies. One of the most vigorous of the subordinate bodies was the Trans-Missouri Freight Association, whose history will be referred to in the next chapter.

The Pacific roads, including the Canadian line, organized the Transcontinental Association in 1888. The chief problem that body had to solve was the competition of the Canadian Pacific with the American lines. Differential and lower rates *via* the Canadian road were agreed to, but as these were not satisfactory to the Southern Pacific, the Transcontinental Association came to an end in 1892. The following year the three California lines established a Transcontinental Freight Rate Committee, which was in existence until 1897, when it gave place to the Transcontinental Freight Bureau, of which all the Pacific lines in the United States became members.

The traffic associations thus reorganized endeavored to regulate the interrelations of rival carriers, but without much success. When the business depression of 1893 and the following four years caused railway traffic to fall off many roads became bankrupt and others were threatened with insolvency. The struggle for business became intense and ruthless, and discriminations were general. The regulation of competition by pooling was not permissible, but

under the stress of circumstances the railroads sought to do secretly or indirectly what the law prevented them from doing openly. In justification of their action the railroad companies asserted that the law imposed impossible conditions upon them. However that may have been, it is certain that the financial condition of the railways was most unsatisfactory from 1893 to 1897; that condition, however, was mainly the result of the speculative financiering of the preceding twenty years. The antipooling law was only one and a minor cause of their discomfiture.

CHAPTER XIX

INTERRAILWAY RELATIONS (*Concluded*)—THE PRESENT SITUATION

Efforts of trunk lines to regulate competition after the prohibition of pooling, 304. Traffic associations decided to be a violation of antitrust law of 1890, 306. Effect of the decision in the traffic association cases, 307. Progress of railroad consolidation, 307. Methods of consolidation, 308. "Community of interest," 309. Traffic associations and informal agreements, 311. Pools legalized, 314. Classes of traffic associations, 315. Shippers' organizations, 318. References, 319.

THE methods by which the railroads attempted to regulate their competitive relations after pooling had been prohibited are shown in the agreements entered into by the members of the Trunk Line Association and by the roads which formed the Trans-Missouri Freight Association. Article VIII of the Trunk Line Association's agreement stipulated that "if the maintenance of uniform tariffs by all lines reduces the traffic of any party below a fair proportion of the traffic in competition, the tariffs may be so adjusted from time to time as to protect such lines from an unjust depletion of traffic, such adjustment to be made under the rules of this association." Likewise the articles of agreement of 1893 of the Central Traffic Association, of which the western connections of the trunk lines were members, contained the proviso that "whenever any party hereto feels that its traffic is being unjustly depleted, it shall represent the facts in writing to the commissioner, who shall promptly endeavor to secure to the parties hereto their fair shares of traffic." What was

to be considered each road's "fair proportion" of traffic was not stated in the agreements, but in all probability there was a tacit understanding on that question.

The Trunk Line and Central Traffic Associations did not succeed in federating in an efficient common organization until the close of 1895. They had a joint committee before that date, but, unlike the Joint Executive Committee that had existed from 1879 to 1887, it had very little power. After making unsuccessful efforts to federate in 1892 and in 1894, they were brought together in 1895 by the stress of circumstances. Traffic was light, competition ruthless, rates were not maintained, and the securities of their companies were at a low ebb. The Joint Traffic Association, which took charge of the joint and competitive business of 32 roads in the Trunk Line and Central Traffic Associations January 1, 1896, was managed by a board of nine men representing the nine largest systems of roads. This board was responsible to the council of the presidents of the roads, and there was a permanent board of three arbitrators. The board of managers did not prescribe the rates to be charged by the several companies, but recommended the rates to be fixed by each road; but as the articles of association stipulated that "the failure to observe such recommendations shall be deemed a violation of this agreement," and as a violation of the contract was punishable by a fine of $5,000, or an amount equal to the gross receipts of the transaction concerned in the violation, the rates were in reality determined by the association. Likewise the traffic was apportioned among the competing roads by the organization. There was nothing specific in the articles of agreement regarding the allotment of percentages, but in 1896 an award of the arbitrators apportioned the traffic eastbound from Chicago among the ten interested roads.

The Joint Traffic Association lasted less than three years.

and was brought to an end by a decision of the Supreme Court. Indeed, the United States commenced proceedings against the association immediately after its activity began, on the grounds that the organization accomplished pooling, and was a violation of the Interstate Commerce Act, and that it was a combination in restraint of trade, and therefore contravened the Antitrust Act of July 2, 1890. In the lower courts the association won, but it lost in the Supreme Court, which based its decision mainly on the antitrust law, the court in 1897 having held that law to apply to railroad agreements to fix and maintain rates.

The decision of 1897 was in the case of the United States against the Trans-Missouri Freight Association. This association was organized April 30, 1889, and had supervision over the competitive traffic of 18 roads west of the Missouri River and the 95th meridian. The purpose of the organization was "mutual protection by establishing and maintaining reasonable rates, rules, and regulations on all freight traffic, both through and local." In 1892 action was begun in the United States Circuit Court to have the association dissolved on the plea that it violated the Antitrust Act. The Circuit Court and the Circuit Court of Appeals decided that this act did not prevent rate agreements, but the Supreme Court, on the 22d of March, 1897, held to the opposite opinion. By the act of July 2, 1890, "every contract, combination in the form of a trust or otherwise, or conspiracy, in restraint of trade or commerce, among the several States, or with foreign nations, is hereby declared to be illegal." The Supreme Court held that an agreement among competing railways to maintain rates—although the rates in question were reasonable and lawful—was a restraint of trade, was contrary to public policy, and was a violation of the antitrust law.

The decision of the Supreme Court in the cases against the Joint Traffic and the Trans-Missouri Freight Asso-

ciations restricted the possibilities of lawful coöperation among independent railroads within very narrow limits. Before 1887 competing railways had been permitted to agree upon and to unite in efforts to maintain rates and fares on interstate traffic and to pool their business or its earnings; after 1887 freight pooling contracts were illegal, but rate agreements were considered lawful until 1897, when the Supreme Court held the law of July 2, 1890, to apply to such agreements among railroads. The Court said that concerted action either in fixing or maintaining charges was unlawful. The traffic associations lost their legal authority to regulate interrailway competition in 1897 and 1898, and the railroads were obliged, if they observed the letter and spirit of the law, either to permit the return of unrestrained rivalry or to seek some other method than formal agreements for the control of their interrelations. One thing done by the railroads was to consolidate much more rapidly than they had ever done previously. The large systems became larger by the absorption of the smaller ones, and the systems thus enlarged further strengthened their power to act harmoniously by the "community of interest" principle of ownership and management.

For a decade following 1897 the consolidation of railroads proceeded with unprecedented rapidity. That this must have greatly changed interrailway relations is obvious. The causes of this rapid consolidation were in part those which operated generally throughout the business world. In production, even more strikingly than in transportation, the large organization supplanted the small one in order that business might be expanded, expenses reduced, and profits increased. There was, moreover, a close connection between the rapidity of consolidation and the great prosperity that prevailed during the decade following 1897. Prosperity called for expansion in all lines of business, and supplied the surplus capital needed for the enlargement of

plants and equipment, and for financing the consolidations that accompanied industrial expansion. Prosperity was not a cause of consolidation, but was a favoring condition.

The consolidations of railroads were brought about in four ways: by purchase, by lease, by means of stock holdings, and by "community of interest" in the management of distinct companies. Among the conspicuous instances of purchases were the sale of the Mobile and Ohio to the Southern, the Lake Shore to the New York Central, the Central Railroad of New Jersey to the Reading, and the Burlington to the Northern Pacific and Great Northern. In some cases the purchases were made because of the previous competition with the line bought, and sometimes because the acquisition of the line would alter the conditions of competition with some other rival system. The purchase was sometimes effected by exchanging stocks of the purchasing company for the securities of the road bought, but more often bonds were used to make the payments. In either case there was usually a large increase in capitalization.

In some States the laws did not permit a railroad to buy out a competing line. In those States, however, consolidation by lease was usually possible. Most consolidations in New England (notably the absorption of the Boston and Albany by the New York Central, and of the Fitchburg by the Boston and Maine) were by lease. The Great Northern system and many others were built up by lease. The tendency of late with several systems has been to change leases into ownership, where the law permits such action. The advantages of securing control by lease are that no new securities need to be issued, and that if the period of the lease is not made unduly long, there is an opportunity from time to time to readjust the financial relations of the two companies. The advantages of purchase of the acquired road are that absolute control for all time is secured, and that the several parts of the system

built up by purchase are more firmly united. The system becomes more of a unit.

An easier method of securing control of an independent company than by purchase in fee, or by leasing, is by the purchase of enough of its capital stock to be able to control the policy of its management. A bare majority of the stock is all that need be purchased, and often a minority share will suffice, because of the voting efficiency of a compact holding. The Pennsylvania had virtual control of the Baltimore and Ohio when $40,000,000 of the $105,000,000 of the stock had been acquired. The Union Pacific could dictate the policy of the Southern Pacific by buying $85,000,000 of $192,000,000 of stock. The plan of consolidating railway interests by stock holdings has long been followed. In 1892 nearly 25 per cent of the railroad stock was owned by the railway companies themselves; the financial depression following 1893 reduced the corporate holdings to less than one-fifth of the total in 1897, but in the three succeeding years they rose over $400,000,000, and again became about one-fourth of the entire amount of stocks. On December 30, 1918, nearly one-third of the railway stock outstanding, or $2,755,836,845 out of $9,055,117,036, was held by railway companies. In other words, in the consolidations carried out since 1897 much use has been made of the old method of stock purchases.

The fourth method of securing unity of control is called "community of interest," by which is meant making some of the directors or officials of one company members of the boards of directors of other companies. Usually, but not always, there is also a community of ownership, the principal owners of one company becoming financially interested in other and rival roads—that is, the "community of interest" usually involves community both in ownership and in management. This plan of securing harmonious action among rival interests was

well illustrated in the construction of the board of directors of the Northern Pacific in 1901. The Great Northern and Union Pacific were each trying to secure control of the Northern Pacific. The struggle also involved the control of the Burlington system, and thus concerned the interests of the Chicago and Northwestern system, a competitor of the Burlington having close traffic relations with the Vanderbilt or New York Central system. The Chicago, Milwaukee and St. Paul, another competitor of the Burlington, and a road closely connected with the Pennsylvania system, was also interested in the outcome of the contest. The rival parties placed their interests in the hands of J. P. Morgan, who settled the struggle by placing on the directorate of the Northern Pacific the president of the Great Northern, the chairman of the executive committee of the Union Pacific, a director of the Chicago, Milwaukee and St. Paul, a director of the Chicago and Northwestern, and a vice president of the Pennsylvania Railroad.

When the Pennsylvania purchased, and while it held, a controlling interest in the Chesapeake and Ohio, the board of directors was so changed as to make place not only for certain officials of the Pennsylvania road, but also for representatives of the New York Central system, which was invited to share in the new management of the Chesapeake and Ohio. The community of interest policy was so generally followed after 1898 that most of the prominent railroad directors and capitalists became members of several boards and financially interested in many companies. In 1905 the majority of the boards of directors of all the railroads between the north Atlantic seaports and the Mississippi River consisted of only 39 individuals. In 1912 an investigation revealed that 13 men controlled 34 important transportation companies in trunk line territory, and they also held a large number of directorships in various industrial and banking corporations. After 1913, partly because

of the pressure of public opinion and partly because of legislation there was a marked tendency toward the dissolution of communities of interest, though this occurred more in connection with banking and industrial corporations than with railroad companies.

While the consolidation of competing railroads and the organization of communities of interest tended to prevent any renewal of destructive rate wars after the decisions of the Supreme Court in the Joint Traffic Association and the Trans-Missouri Freight Association cases, railway combination was not carried to the point of eliminating all competition. Only the combination of all the railroads in the country into one huge system would have brought competitive rivalry to an end. In numerous instances rival financial interests refused to combine. Moreover, early in the twentieth century the Sherman Law was employed effectively to prevent the further development of railroad combination, and even to break up some of the combinations already organized. The Northern Securities Company, by means of which the Harriman and the Hill interests tried to pool their properties after the dramatic contest for the control of the Northern Pacific, was held in 1904 to be a type of combination forbidden by the Sherman Law. This law was later used to compel the dissolution of the Union Pacific-Southern system and the New Haven system.

While the combination movement was in progress and after it had reached its highest stage of development the railroad companies were faced with the problem of controlling rates on competitive traffic in many sections of the country. Since there was no legal method by which rate agreements could be formally adopted, the carriers contrived to bring about the necessary agreements in an informal manner. These agreements were maintained through the traffic associations.

The traffic associations were not abandoned after the

adverse decisions of the Supreme Court on the question of formal agreements. Their articles of agreement were so changed as to make them conform to the law, that is, the functions of making and maintaining charges, were, according to the revised articles of association, left with the individual companies. But while the associations nominally and technically surrendered these functions, as a matter of fact they continued to exercise a large measure of authority in the determination of rates on competitive traffic. Railways must coöperate in classifying traffic, in working out their schedules of rates, and in fixing joint and competitive charges exacted for the performance of the vast and intricate service of transportation. Were each company to act solely for itself and without regard to the classifications being followed and the charges being made by the railroads serving other centers of population and regions of production, the result would be intolerable discriminations and business conditions little less than chaotic. Indeed, it would be impossible for the railroads to observe the Interstate Commerce Act or any other law requiring them to exact of all persons and all places only reasonable and just fares and rates. And so, while each railroad was supposed to prescribe its own charges, its officials conferred with those of other lines regarding joint and competitive business and coöperated with them in making classifications and adjusting rates. The meetings of the traffic associations afforded the opportunity for such coöperation. These associations, moreover, as formerly, concerned themselves with numerous matters, other than pooling and rate agreements, affecting the interrelations of railways. The informal understandings reached at the meetings of these traffic associations were generally accepted by the constituent companies. The Interstate Commerce Commission in its report for 1901 stated "that the decision of the United States Supreme Court in the Trans-Missouri case and

the Joint Traffic Association case has produced no practical effect upon the railway operations of the country. Such associations, in fact, exist now as they did before those decisions, and with the same general effect." It should be added, however, that the associations were able to produce "the same general effect" during a period of business prosperity. It is not at all certain that the recommendations of the associations as to rates would have been carried out had every road been struggling to the uttermost to increase its tonnage.

In 1910 it seemed for a time that the traffic associations were to be subjected to attack by the Federal Department of Justice. The western trunk line railroads made a concerted effort to advance their freight charges. The Department of Justice obtained a temporary injunction in the Federal courts to prevent the new schedules from going into effect. Subsequently the schedules were withdrawn and the suits discontinued. A successful prosecution might have resulted in a condemnation of the traffic associations. The Interstate Commerce Act was amended to give the Commission power to suspend proposed changes in rates pending an investigation of their reasonableness. This legislation deprived the railroads of the power to make undue and unjust increases in rates, without disturbing the organizations through which they effected their informal agreements with respect to the charges on competitive traffic. Though coöperation in rate making was illegal, no action was taken against the carriers. Notwithstanding the fact that the law of 1887 was based primarily upon the theory that the carriers should be forced to compete with one another in establishing their charges, there was a tacit recognition of the fact that such competition would result in injury both to the railroads and to the public, and no effort was made to carry out the letter of the law.

Some effort was made to change this anomalous situa-

tion. An attempt was made to include in the railway rate act of 1910 a clause that would have permitted the carriers to enter into formal rate agreements, subject to the approval of the Interstate Commerce Commission, but without success. Had such legislation been enacted it would have removed all doubt as to the legal status of the informal understandings reached through the medium of the traffic associations. By the time the Transportation Act of 1920 was passed, there had been a decided change in the attitude of Congress with respect to the problem of railroad coöperation in rate making. In this law the necessity of coöperation was at last recognized. The fifth section of the Interstate Commerce Act—the antipooling section—was amended. Railroad corporations may now legally enter into such pooling agreements as may receive the sanction of the Interstate Commerce Commission. The Commission has taken action under this section in giving its approval to the form of contract adopted by the railroads and the American Railway Express Company. This contract, which was described in the chapter dealing with the express service, provides for the division of part of the earnings of the express company among the carriers of certain districts.

The Transportation Act further recognizes the undesirability of rate wars between rival carriers by giving the Interstate Commerce Commission the power to name minimum as well as maximum rates. With this power the Commission can bring any destructive rate war to an end. Another evidence of a change in the spirit of Federal railroad legislation appears in that part of the amended fifth section of the Interstate Commerce Act, which directs the Interstate Commerce Commission to devise a plan for the consolidation of the railroads into a limited number of systems. Though these systems must be, as far as possible, competitive with regard to service, they must nevertheless

be "so arranged that the cost of transportation as between competitive systems and as related to the value of properties through which the service is rendered shall be the same, so far as practicable, *so that these systems can employ uniform rates in the movement of competitive traffic* and under efficient management earn substantially the same rate of return upon the value of their respective railway properties."

Though the law now permits pooling of traffic or earnings, it is doubtful if the railroads attempt to enter generally into pooling agreements. The pool was never an end in itself, but merely a means to an end. It was a device to prevent the violation of rate agreements. The possibility of a violation of the rate agreements which carriers now maintain is so remote that it is exceedingly doubtful that it will ever be necessary for them to resort to pools for the purpose of controlling competition. The traffic associations have functioned well, and there is little reason to believe that their effectiveness cannot be relied upon in the future. If compulsory consolidation of railroads should eventually be provided for, the need for the organization of pools will be even less likely to occur.

There are four classes of railroad traffic associations, each performing distinct services. The first class includes the large organizations of which all railroads in a wide section of country are members. The second class comprises associations limited to a small territory, usually a single state. The third class consists of local bureaus interested in the traffic of a single city and its immediately surrounding country; while the fourth type of organization has to do with one or more specific kinds of traffic.

In the main the existing freight and passenger associations are reorganized forms of those that were established in the seventies and eighties. While the railroads were being operated by the Government during the World War

the activities of the traffic associations were discontinued. After the resumption of private operation the associations reorganized, with some changes as to membership and territorial jurisdiction. The larger organizations (those of the first type) may be grouped according to the territorial classification of railroads already presented. (1) The New England roads have the New England Passenger Association and the New England Freight Association, the latter organization possessing only a few limited functions. (2) The Trunk Line Association, with the same membership as in the past, is made up chiefly of the powerful trunk line companies operating east of Buffalo, Erie, Pittsburgh and Wheeling. This association has a passenger department with all the functions which a separate body would have. West from Buffalo, Erie and Pittsburgh to Chicago and St. Louis is the territory of the Central Freight Association and the Central Passenger Association. The railways in the eastern group also maintain in connection with the eastern lines south of the Potomac River the Eastern Railroad Association, which is concerned primarily with the traffic of the Atlantic States. (3) South of the Ohio and the Potomac and east of the Mississippi are the Southern Freight Rate Association and the Southeastern Passenger Association. These organizations cover the field once occupied by the Southern Railway and Steamship Association. (4) In the territory southwest of St. Louis and west of the Mississippi River is the Southwestern Freight Bureau and the Southwestern Passenger Association. (5) The region north of this territory and west of the Mississippi River and Lake Michigan to the Rocky Mountain is occupied by the Western Trunk Line Committee and the Western Passenger Association. (6) The traffic to and from the Pacific coast is supervised by the Transcontinental Freight Bureau and the Transcontinental Passenger Association. In each of these various sections there are several

other associations, but they are less influential than the associations mentioned.

It is through the work of these associations that the joint arrangements concerning rates and traffic are made and the excesses which formerly characterized railway competition are avoided. According to the articles of organization of the Central Freight Association its purposes are, "To enable the members to confer, advise, and coöperate with each other and with other roads upon the subjects of divisions of through rates, statistics, classifications, rules, regulations and inspection, and to secure to the members the interchange and promulgation of authentic information in regard to the traffic and tariffs and rates of the respective parties." It is through the dissemination of "authentic information" that harmonious policies with regard to rates secure adoption. The members of the association agree "to send to the chairman two copies of all local and joint state and interstate tariffs of rates and of charges therein . . . at the time of making, issuing, or filing the same with the Interstate Commerce Commission." Rate committees of the various associations discuss in conference whatever changes may be suggested in the rate structures of their territories.

The chief executive officer of a traffic association usually bears the title of chairman, and his chief duties are to inform all members of any proposition made by an individual member concerning changes in rates or traffic arrangements, to interpret the articles of agreement, to compile and issue statistics and joint publications including tariffs, and to preside at the regular and special meetings. Permanent committees are maintained by some associations to inspect the weights, classifications and rates applying to traffic on the member railroads. The expenses of an association are shared jointly by the members in a manner agreed upon. At meetings of the association or its committees, the mem-

ber railroad is represented by a designated official, usually a traffic manager or a general freight or passenger agent.

There are many other railway associations in the United States in addition to the traffic associations. These organizations exist primarily for the purpose of securing harmony of practice and policy among the carriers. Some of these are associations of technical officials, like surgeons, master mechanics, engineers of maintenance of way, and accounting officers. In other organizations the membership is made up of administrative officers, such as general baggage agents, general passenger agents, railroad superintendents, and other executives. Virtually all the railroads of the United States are members of the American Railway Association. This powerful and influential organization has done much to standardize railway methods in all departments of the service. It maintains a number of permanent divisions and committees, each of which undertakes the scientific investigation of transportation problems of a technical nature. The Association of Railway Executives, organized in 1912, includes in its membership the chief executive officers of all the large railroads of the United States. It was organized originally to represent the carriers on matters concerning the Federal regulation of railroads. While Congress was deliberating upon the provisions of the Transportation Act of 1920 the Association submitted a series of proposals with respect to railroad legislation. Since the enactment of that law the Association has given its attention to the various problems, connected primarily with rates and the wages of railroad employees, which came before the carriers after the termination of Government control.

Corresponding to the traffic associations of the railroads are a number of shippers' organizations, the purpose of which is to look after the interests of those who use the railroads. These organizations present the shippers' views

on questions of legislation, and represent the shippers in any controversies which may arise over railroad rates and services. The Chambers of Commerce of most cities have traffic managers who look after the transportation interests of their respective cities. The largest and most influential traffic organization of shippers is the National Industrial Traffic League, which represents various industrial interests all over the United States. This organization has taken a prominent part in the formulation of the railroad policy of the country, and it has had much to do with the standardization of rules and regulations governing various railroad practices. It endeavors to coöperate with the railroad organizations to bring about the amicable settlement of differences between carriers and shippers. Since the enactment of the Transportation Act the National Industrial Traffic League and the American Railway Association have maintained joint committees to consider railroad rate problems in the different traffic districts of the United States. The work of these committees has done much to promote good feeling among the railroads and their patrons.

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CHAPTER XX

MONOPOLY AND COMPETITION IN THE RAILROAD SERVICE

Railroad corporations must be large and must coöperate, 321. Scope of railroad monopoly must be understood in considering charges and government regulation, 323. What is meant by monopoly, 323. The oil business an example of monopoly, 324. The railroad business has not been a complete monopoly, 325. Railroad coöperation is of two kinds; the attitude of the law toward each kind, 326. Railroad competition is of two kinds, 327. Railroad competition is not confined to junction points, 328. The competition of markets, 328. Influence of competition upon local rates, 330. The monopoly of the railroad is only partial, 332. Government regulation of a partial monopoly may be necessary, 332. The term natural monopoly not strictly accurate, 333. References, 333.

THE railroad service of the present and future is one that must be performed by large corporations, among which coöperation is necessary. Not only in the management of their joint traffic, but quite as much in the regulation of their competitive business, experience shows that the railroad companies must work together if the property invested in railroads is to be protected against "ruinous competition," and if the public is to receive an adequate service at rates that do not unjustly discriminate between persons, places, or classes of traffic. In spite of State and Federal laws to enforce competition among railroads, and possibly to some extent because of those laws, the companies have sought unceasingly to increase the efficiency of their coöperation.

The forces which control industrial organization, whether in transportation or in manufacturing, have operated in recent years to bring about extensive consolidations, and interrailway rivalry has in a large measure been suppressed by consolidation, by community of interest, or by informal agreements through which harmonious coöperation can be secured among nominally competing lines. Had the process of territorial consolidation not been checked it is extremely probable that the great railroad companies of the United States would eventually have accomplished a complete division of the field. Though the process of railroad combination was checked, the consolidations which were effected did much to overcome competition, and where actual consolidation did not take place competition among lines serving the same district has been brought under control. It now seems probable that railroad consolidation will be favored by legislation rather than impeded, but whether a compulsory consolidation law is enacted or not one may assume with reasonable certainty that the days of unrestricted competition among rival railway lines are entirely past.

To what extent have the spread of harmonious relations among railroads serving the same territory and the progress of actual consolidation of competing lines established monopoly conditions in the transportation service? This is a question to which a clear answer is desired by every thoughtful person. Private monopoly is abhorrent to our sense of right. It runs counter both to our feelings of what is just and to the legal principles in which those feelings find expression. If the coöperation of independent railroads by pooling or otherwise, or the consolidation of their management by means of a community of interest or by the absorption of the weaker lines by the stronger systems, confers monopoly powers of an oppressive character upon the corporations which thus unite, the protection of the public

interests demands either that the coöperation or consolidations should be prevented, or, if their prohibition is not possible, that the relations of the railroad companies with each other and with the public should be so regulated as to limit the exercise of monopoly powers. The scope and limitations of monopoly and competition in railway management must be understood and kept in mind in considering railroad charges and the questions of government regulation.

It is customary for those who have not studied the subject carefully to associate monopoly with large corporations or combinations of capital, and to assume that the consolidation of independent companies is brought about mainly to establish a monopoly. As a matter of fact, the concentration of the control either of capital or of productive forces may create a monopoly or it may not; and if monopoly powers are secured, they may be either complete or only partial.

The two leading motives for the substitution of the large railroad or industrial corporations for the smaller ones are (1) to reduce the expenses by means of the greater economy of doing business on a large scale; and (2) to secure, if possible, the power, either absolute or partial, of fixing the prices paid by the purchasing public. The first of the two purposes is always alleged to be the one sought for by those concerned in any particular consolidation, and usually expenses can be cut down by placing several small concerns under one control, although this is not always possible, because the supervision of the affairs of a large business may not be so close and so personal as can those of a small undertaking.

Any producer or carrier, whether an individual, a corporation, or a combination of corporations, who has the power to fix the price which the buyer must pay, possesses a monopoly. The monopoly power is the power to fix the

price. An individual or a combination having full power to fix the purchaser's price possesses a complete monopoly. In some businesses the producer's power is absolute only in parts of his business; in other parts the forces which fix prices are beyond his control; such a producer has a partial monopoly. But whether the monopoly is partial or complete, the essence of monopoly is the power to control the price; and a business enterprise, whether large or small, is monopolistic to the extent that those who manage it have control over the prices which the buyer must pay.

In a certain sense the producer never has the sole power to fix the price, even though he may be the only person from whom the commodity or service in his control can be secured, because he must always consult the nature of the purchasers' wants and their ability to pay. If the possessor of a monopoly charges more than any buyer is willing to pay, no sales will be made; if the prices are fixed higher than any considerable percentage of possible buyers can afford to give, the market will be largely restricted. This is equivalent to saying that the consumers or users are the ones who fix the limit beyond which charges cannot go; but if all or the larger share of the supply required by purchasers can be obtained only from one person or combination of producers, those who sell can compel those who buy to pay all they are willing to give rather than go without the commodity or service desired. The price fixed under such conditions is a monopoly price pure and simple. Those who sell charge what they think will yield them the maximum profits on their total business.

A familiar example of a monopoly is that of the Standard Oil interests. This organization does not own or control all the oil-wells, but owning a majority of the wells or of the pipe lines from the wells, it is able effectually to control the oil market of the country. The price which

consumers must pay for petroleum is determined by the Standard Oil interests and the prices are presumably those that will yield largest profits. In fixing the price of oil, however, the market has to be carefully studied. The amount of oil used is largely affected by the price, and this is so not only because if prices are made unduly high men will forego in part the advantages and pleasure of artificial light, but also because the people who live in towns and cities usually have the option of using gas or electricity instead of petroleum oil. This explains why the price of illuminating oil steadily declined for many years, when at the same time the Standard Oil Company was increasing its control of the production and sale of petroleum.

To determine whether a railroad corporation, large or small, possesses a monopoly, and if so whether its monopoly is absolute or partial, it is necessary to ascertain whether and to what extent the railway companies acting singly or in combination can fix the rates and fares paid by the public. If those who manage our railroads can fix the charges to be paid for their services, subject only to the ability and willingness of the public to pay the charges, then the railway service is a complete monopoly. If, however, the rates and fares are subject to forces which the railroad companies cannot control, even when they act in harmony—forces which keep the charges much below the ability of the purchaser to pay, and in many instances below what he would pay rather than go without the service desired—then the railroad business is not a complete monopoly; it is subject to competitive forces which prevent it from becoming more than a partial monopoly. One purpose of the discussion of interrailway relations in the three preceding chapters was to show that the railways have never been able in the past to do more than restrain or regulate competition; they have never

succeeded in eliminating competition among themselves. Their monopoly has never been more than partial.

In considering the extent to which the railroad service is a monopoly and to what extent it is and will continue to be competitive, attention must be given to the effect of competition upon the charges fixed on the railroads which are separately owned but whose owners coöperate by pooling or otherwise, and also the effect upon the charges fixed on the roads that have been consolidated into a large system or a group of systems serving a considerable section of the country. The two questions to be answered are: (1) How does competition affect the charges of coöperating roads and (2) to what extent can the consolidation of competing lines or other methods of securing unified action eradicate competition in the transportation service?

There are two kinds of coöperation: that of connecting roads and that of competing lines. The necessity and desirability of the joint arrangements for expediting through traffic are recognized by everybody, and the Interstate Commerce law requires the railroad companies to "afford all reasonable, proper, and equal facilities for the interchange of traffic between their respective lines," and the same law prohibits all devices intended to prevent the "carriage of freights from being continuous from the place of shipment to the place of destination." But whether the law did or did not require this, the connecting railroads would usually find it to their advantage to facilitate through traffic as much as possible.

The other kind of coöperation is that among competing roads. Formerly, the laws of the States and the Federal Government endeavored to prevent all unity of action among competing carriers. The laws against pooling and against associated action in the making and maintenance of rates and fares were stringent, and the courts always held that pooling and associated rate making, whether prohibited

by statute or not, were illegal at common law because they are "in restraint of trade." The theory underlying the Federal railroad legislation of 1920 is that railroad companies should be permitted to coöperate in establishing rates and fares, though all such coöperative action must be under the close supervision of the Interstate Commerce Commission.

It is obvious that the chief purpose of the railroad companies in associating is to agree upon the rates they will charge and to stop bidding against each other to secure traffic; in other words, the object of coöperation is to stop competition, if possible, and if that is impossible, to restrain competition; and, as a matter of fact, coöperation does enable the railroads in a large measure, and consolidation enables them to a greater degree, to remove the incentive of the managers of the different lines serving the same termini or common territory or rival regions of production to cut rates to secure business. To what extent do rates and fares remain subject to competitive forces? To what extent do railroad charges become monopolistic?

Competition among railroads is carried on to secure an increased traffic. Most kinds of traffic can be attracted in either one of two ways: by a reduction in charges or by an improvement in the service rendered. Theoretically, these two kinds of competition are the same; for in each case the carrier gives more for what he gets and the purchaser of the service receives more for what he pays; but in practice these two ways of competing operate differently. Experience has shown that agreements as to charges and as to divisions of traffic or earnings have not kept railroad managers from seeking to attract business by improvements in service. In the days when pooling was general, the traffic allotments were usually made annually, and each company which was a member to the agreement sought by improving the service offered to increase

its business, and thus to be able to establish a claim to a larger share of the pooled business. But quite independent of pooling arrangements, every railroad management has a powerful incentive to increase the traffic of its road or system of lines, because the railroad business is one in which the profits increase more than proportionately to the enlargement of the traffic. It is a business of rapidly "increasing returns," and agreements as to rates do not stop the operation of that law, nor indeed can it be done by the consolidation of competing roads.

The interrailway competition that attracts most attention is that which occurs in places served by two or more roads. Some cities or junctions are called competitive points. In them the several carriers may bid more or less keenly for the same traffic. In fact, however, the great majority of cities and localities are served by only one railroad, and if competition were limited to junction points it would have comparatively limited scope. Rate and pooling agreements have dealt mainly with the traffic of "competitive points," and consequently have not directly concerned the business of the great majority of places, nor have the agreements ever covered more than a minor share of the total traffic of the railroad companies making them. If the competitive forces affecting railway charges were only those operating at junction points, the greater portion of the railway business would be non-competitive. The rivalry of railways at competitive points has been only one of the safeguards of the public against high charges.

A more far-reaching influence on rates is exerted by what is termed "the competition of markets," by which is meant the competition in the same markets of producers in different sections of the country and different parts of the world. Since the costs of transportation have been so reduced by the railroad and the steamship that practically every producer has the world for his market, the com-

modities of many sections compete in the same centers of distribution. Every railroad is a joint producer with the farmers, the manufacturers, the miners, and the lumbermen of the section served by the railroad, the carrier having a common interest with the man who grows or makes commodities in getting those commodities into the world's markets, and at a cost that will permit the articles to be sold in large quantities.

The "competition of the markets" is not dependent upon the relations of the railroads to each other. Whether the carriers act singly or in association or are consolidated into territorial groups, each group having a single management, the struggle for the market goes on. The rivalry is international as well as interregional within a single country; it is the struggle which causes and accompanies the territorial division of production.

The instances of industrial competition are so numerous and well known that only a few need be mentioned. The coal from Nova Scotia competes in New England with that from Pennsylvania and West Virginia; the bituminous coal fields west of the Alleghenies compete with each other and with the anthracite fields east of the mountains. Alabama iron competes with that from Michigan and Pennsylvania in the American trade, and the iron and steel and other manufactures of these and other States are sold the world over in competition with European products.

A striking illustration of the effect of the competition of markets was alluded to in Chapter XVII. The first long railroad trunk lines to be established in the United States were those running east and west north of the Potomac and Ohio Rivers. During recent years numerous north and south trunk lines have connected the Gulf with the central West, and now that great and developing region uses both the Atlantic and Gulf ports as gateways for its export and import trade. Rates between the Atlantic seaboard and

the central West cannot much exceed those between the central West and Galveston, New Orleans, Mobile, and other Gulf cities.

For the trade of the Southern States there is a strong competition between the States of the upper Mississippi Valley and those adjacent to our north Atlantic seaboard. The manufacturers and others shipping south from the north Atlantic States have the option of sending their goods by water or by rail, and are thus able to secure more favorable rates from the railroads than could otherwise be obtained. The railways leading south from Illinois and the surrounding States are obliged to give their patrons as low rates as the eastern shippers receive, otherwise the western producers would lose their southern markets.

The industrial competition illustrated in the preceding paragraphs applies to some extent to the traffic of the small local or "non-competitive" points as well as to the shipments to and from the large centers of production or distribution. Although the local shipper is served by only one carrier, he usually has some measure of protection against high rates. The carrier's monopoly is not absolute for several reasons. In the first place, it is to the interest of the railroad company to give the local producer a rate that will enable him to market his commodities with a profit sufficient to cause the business to expand and the railroad's tonnage to increase. Furthermore, the local rates are not permitted by the Interstate Commerce law and the laws of several States to exceed the through rates when the local and shorter distance traffic is hauled over the same route and in the same direction as the longer distance through business. The competitive forces which bear down charges at the places served by several roads indirectly affect the rates at local points having only one carrier.

Again, no railroad can safely keep its local rates much higher than other companies charge on their local busi-

ness, because if this is done those persons having industrial establishments along the line of that road will (if their business is such that it can be moved) transfer their plants to the lines of railroad companies offering more favorable rates. If the industry is one from which the invested capital cannot be withdrawn, it must remain; but the business will decline in competition with the regions receiving more favorable rates, and the railroad's tonnage will fall off. Every railroad management is eager to have capitalists invest along its line of road, and frequently the special inducement of a low local rate is offered. Other things being equal, that road will secure the greater number of industries and have the more rapid development of local traffic whose local rates are the lowest. Railroad companies are fully aware of this fact, and many of them have officials, usually called industrial agents, whose business it is to ascertain what new industries can be developed along the company's lines, and to find the men who are able and willing to devote their capital and energy to those industries.

Railroad companies classify their freight by putting like kinds of commodities into the same class, and they are forbidden by law to discriminate unjustly against particular classes of freight; they are likewise forbidden to make unreasonable discriminations between different shippers and between different localities; and while it has not been possible for the law to prevent all unfair discriminations, it is possible that the ability of some of the local industries to command favorable treatment has been of indirect benefit to the other industrial enterprises—those from which capital cannot readily be withdrawn and those whose owners have not obtained the assurance of favorable rates as a condition of locating along the line of a particular railroad. Industrial competition, through the influence it has upon the mobility of capital and upon the direction taken by capital seeking investment, has probably affected to some extent

the rates on nearly all kinds of local traffic. This competitive or regulating factor is one whose operation is only partially stopped by the consolidation of roads into territorial groups. By combining all the railroads within a large section of the country under one control, the local rates on all the roads would probably be equally favorable or unfavorable; but still each road would have the same reasons it formerly had for keeping its industries in a flourishing condition and for striving to secure new industries. Moreover, if there were several groups of roads the management of each group would take care to make local rates that would hold and attract capital.

The conclusion warranted by the foregoing analysis of the influences affecting railway charges is that the railroad company possesses only a partial monopoly. If the railroad company were able to compel its patrons to pay *all* they would pay rather than forego receiving the transportation services desired, the company would possess a complete monopoly. On the other hand, if the railroads were obliged to accept only such rates and fares as the shippers and travelers might choose to pay, the carriers would have no monopoly power whatever. As a matter of fact, neither the carriers nor their patrons possess absolutely the power of determining the charges for transportation. Rates and fares are neither the lowest the railroads will accept nor the highest the public will pay; and this is so because the monopoly possessed by the carrier is only a partial one. Railroad charges are affected by numerous competitive forces which are beyond the control of the railway managers, and which prevent transportation charges, in most instances, from being fixed at the point of maximum profits. These competitive forces prevail not only among carriers, but quite as much in the industrial world.

The effect of railway consolidations will unquestionably

be to increase the power of those combinations to restrain the operation of the competitive forces just described. The present partial monopoly of the companies will become a more effective one; but the nature of the competitive forces is such that the railroads cannot secure a complete monopoly. Whether the monopoly power possessed by the railroad companies at the present time, or at any future time, is a greater one than is consistent with the welfare of the public, is a question for the public to decide. The railroad companies are engaged in a service of a public nature; if they possess great power in determining transportation charges, it is the right and the duty of the government to limit that power by regulative legislation. It does not disprove the necessity for the government regulation of railway charges to prove that the monopoly possessed by the railroads is only partial and not absolute.

The railroad business is very frequently spoken of as a "natural monopoly." While the term expresses a partial truth, it is apt to suggest the idea of a complete monopoly, and thus to convey a wrong meaning. Indeed, those who call railroads natural monopolies also apply the term to industrial enterprises whose managers have the power to fix prices at the point of maximum profits—that is, to charge all the public will pay rather than forego purchasing. It is better to call railroads partial monopolies, and to apply the term complete monopolies to those businesses in which the seller has the power of dictating prices to the buyer.

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CHAPTER XXI

THEORY OF RATES AND FARES

Need of a theoretical basis of rates and fares, 334. Meanings of the term "cost," 335. The impossibility of determining exactly the cost of a particular service, 336. Cost an undesirable as well as an impracticable basis of railway charges, 337. The value of the service theory of charges, 340. The value of commodity theory, or the taxation principle, of charges, 342. Charging "what the traffic will bear," 343. What constitutes a theoretically just rate? 344. Discriminations may be just or unjust, 346. The socialization of rates and fares, 347. References, 348.

THE foregoing analysis of interrailway relations and of the scope of competition and monopoly in the railroad service indicates the conditions under which carriers work in fixing rates and fares. It is the purpose of this chapter to discuss the theoretical basis of rates and fares, that is, to consider what principles are followed in the determination of what constitutes a reasonable and just amount for a shipper or a traveler to pay the carrier for the service of transportation. This question has become one of great importance since governmental authorities began to exercise the right to fix rates and fares. Commissions and legislative bodies endowed with the power of establishing maximum rates and courts which review the orders of commissions or the acts of legislative bodies with respect to railroad rates are bound to observe the general injunction that rates must be reasonable and just. Manifestly, in order to do justice both to the carriers and to the public, legislative and judicial bodies must be guided to a certain

extent by abstract principles of rate making. Unfortunately there is no definite method which may be used in arriving at a conclusion as to the reasonableness of rates; there are, however, a few important general principles which may be taken into consideration.

The charge for transportation, or any other service, may in theory be fixed either with reference to the cost of the service to the agent who performs the work or with regard to the value of the service to the recipient, or the charge may be affected by both the cost and the value of the service. Abstractly considered, it seems most natural to assume that the payment for the service should be in proportion to the cost—that the carrier's charges for services of different kinds should vary according to the differences in the costs of performing the several tasks. In reality, however, it is impossible to determine railroad charges strictly according to the costs of the services.

In discussing the cost theory of railway rates, it is necessary to keep clearly in mind what is meant by cost, because the word is used with several meanings. In the preceding paragraph the word is used to include *all* the expenses chargeable against the service—interest on the capital employed, deterioration of plant, insurance, wages, outlay for operating expenses, ordinary business profits, etc. The word "cost" is, however, frequently used to mean only operating expenses, or the expenses incurred in using the plant to perform a service. The railroad is thought of as being in existence and in use, and the costs of the services are considered to be expenses of operation. In this sense the cost of each of the several services is its appropriate share of the aggregate operating expenses caused by the performance of a multitude of services. The cost of a single service is such a part of the total operating expenses as may be properly charged against that service. Again, the cost

of any particular service is often thought of as only the additional or extra expense incurred in performing that service, that is, the outlay that would not have been made had the freight or passenger not been carried. This is the sense in which the traffic manager is most apt to use the term when he is considering whether he will accept or reject an offer of freight or an opportunity to run an additional passenger coach or train. The traffic manager seeks to ascertain how much additional it will cost to do this service, and if the increase in expenses is appreciably less than the additional receipts to be secured, he will perform the service rather than let it be done by a rival carrier.

In whichever sense the term "cost" is used, it is impossible for the railroad official to ascertain precisely what are the costs of a particular transportation service. Every railroad engaged in transporting general traffic carries thousands of different commodities; the cargo of a freight train is usually made up of a large variety of articles, and frequently several kinds of goods are sent in the same car. To enable the company to run a train or haul a car, the roadway, depots, yards, and all the different parts of the service have to be provided. Out of the gross receipts obtained from the shippers and passengers, the various expenses of the company are met; but no company is able to determine just what part of the expense incurred by the several branches of the service should be charged against the man who has sent a ton or a carload of goods a certain distance over the company's road, or against the man who has traveled a given number of miles on the line. Most of the expenditures of a railroad company are "joint costs," that is, they are paid out for the maintenance of the service as a whole, and have little direct connection with any particular act of transportation. About three-tenths of the railroad company's total costs are capital costs, taxes, and other fixed charges, and seven-tenths are operating and

maintenance expenses. Obviously the volume of traffic cannot appreciably lessen or increase fixed charges. Operating expenses alone will vary greatly with the tonnage handled and the number of services performed, but, even in the case of outlay for operation, only a part of the expenses is affected by the increase or decrease of traffic. A decline or a gain of 10 or 20 per cent in volume of business will have but comparatively little effect upon the outlay for track, structures, terminals, and even for cars and locomotives. The revenue obtained from each freight and passenger service performed should, if possible, be made to contribute something, but no one can say just how much, toward the joint or aggregate costs of maintaining and operating the transportation organization.

About as far as the traffic official can go in measuring cost is to calculate the expenses of running a train. The outlay for wages of train crew, for fuel, oil, repairs, and maintenance of cars and locomotives, can be calculated rather closely, and thus the expense of moving a particular train a mile—the "train-mile costs"—can be got at with some degree of certainty; but unless the train is loaded with only one commodity this does not enable the statistician to calculate what movement expenses are incurred in connection with each or any of the articles of freight of which the train's cargo is composed. Besides meeting the expenses due to moving the train, the receipts from the traffic carried by the train should contribute a greater or less amount toward defraying the company's "joint costs," but how much of the joint expenses to charge against any particular train cannot be closely determined, much less can one decide precisely how much of the "joint costs" are incurred in transporting each commodity in the cargo.

Even if it were possible to ascertain the cost of performing a particular service, and thus to base rates and fares upon the cost, it would be to the advantage neither

of the public nor of the carrier to adopt a strictly cost basis of charges. If charges were apportioned among commodities according to the cost of transportation, the revenues derived from articles of small bulk but of high value—such as laces, silks, shoes, etc.—would be much less than present receipts, and such commodities as coal, iron ore, lumber, grain, salt, and fertilizers would have to pay higher rates than they are now charged. To raise the rates largely on the bulky materials of industry would so restrict the amounts transported as greatly to limit industry, to reduce the volume of manufactures to be carried by the railroads, and to impose serious restraints upon social progress. The phenomenal industrial advance of the United States since 1890 has been made possible by the low transportation rates on food products and the materials of industry; and these low charges would not have been possible had not the less bulky articles of higher value paid more than their proportionate share of the total expenses of railroad transportation.

But while it is neither possible nor desirable to fix railway charges solely with reference to cost of service, this principle must nevertheless receive full consideration in the determination of reasonable rates. The charge for transporting any commodity or class of freight should vary with the weight of the consignment and the distance it is shipped, for the reason that both weight and distance are factors affecting the cost of service. Expenses, however, do not rise proportionately with the increase of either factor. It costs less per ton or per hundredweight to transport goods in train loads than in single carload quantities, and less in carloads than in smaller amounts; likewise the movement expenses per ton per mile grow less with every increase in the length of the haul, and the terminal expenses, which also must be covered by the rate charged, are less per ton per mile when distributed over a long

haul. Low rates given to carload shipments and especially low rates on coal, iron ore, and other commodities when hauled in full train loads, are justified by differences in the cost of service, and charges for long hauls are likewise properly less per ton per mile than are the rates for short distances.

The importance that should be attached to distance in making rates is a much debated question. While no one advocates charging a flat rate per ton per mile regardless of distance, there are wide differences of opinion as to the extent to which it is proper to deviate from that rule. In the days of unregulated competition the struggle of railways for traffic to and from large industrial or trade centers caused lower absolute rates to be given for long-distance hauls between competitive points than were accorded for the shorter hauls to and from intermediate points where rivalry for traffic was less intense or was non-existent. The Act to Regulate Commerce of 1887 contained a clause designed to curb this practice, but its wording robbed it of effectiveness. The Railway Rate Act of 1910 definitely prohibited a greater charge for the shorter intermediate haul, unless permission to make such a discrimination should be given the carrier by the Interstate Commerce Commission. This law was manifestly a recognition of the importance of cost of service in rate making.

The Interstate Commerce Act, as amended in 1920, now contains a specific rule for the guidance of the Interstate Commerce Commission in establishing the general level of rates. This rule, which requires that the level of rates be such as to provide a revenue which will enable the carriers, under efficient and economical management, to earn a definite rate of return on their property, is a recognition of the cost element in rate making. The impossibility of ascertaining the cost of hauling single shipments will continue to prevent an exact application of the cost theory to

individual rates, but under normal conditions it should be possible to determine whether railroad charges as a whole are at a "reasonable" level.

If the value of the service received by the shipper or traveler were made the basis of railway charges, rates would be fixed with reference to the value added to an article by being transported from one place to another, and fares would depend on the values which passengers placed upon being carried certain distances by rail. If a bushel of wheat is worth 60 cents in Minnesota and 80 cents in New York, the railroad can add 20 cents to the value of the wheat by carrying it from Minnesota to New York; and if the transportation charge were made equal to the entire value of the service of carriage the rate could be made nearly 20 cents a bushel. Likewise, if the people desiring to travel between Philadelphia and New York place an average estimate of $2.50 on the value of riding by rail between the two cities, the fare can be made $2.50. It is evident, however, that the value of the service in the passenger business is not easy to ascertain. One man may prefer to pay several hundred dollars rather than forego a quick trip by rail from New York to Philadelphia, while another person desirous of making the trip may not consider the service worth as much as $2.50. Commodities have market values in all places where they are bought and sold, and the excess in the price of an article in one market over the price in another place indicates how much value transportation can add to the article, but there is no general measure of the values that can be created by transporting persons. All the railroad company can do to ascertain the value of its passenger services is to watch the effects of fares on the volume of travel. If an increase in fares considerably reduces the number of journeys taken, the fares are presumably above the average value of the service. Likewise, if a large increase in travel results

from a reduction of charges, the inference would be that fares had been in excess of the average of the value of the service.

The value of the service is, unquestionably, the chief basis of railway charges as fixed by railway officials, and moreover its validity as a basis of rates has at various times been sanctioned by the Interstate Commerce Commission. Charging what the traffic will bear has been the "great dynamic force" in the rate-making policy of American railway managers. The railroads in the United States have shared with farmers, miners, lumbermen, manufacturers and other producers in the great work of developing the material resources of the United States, and have sought to adapt transportation rates to the requirements of production and to trade conditions prevailing in a country where raw materials are remote from mills and where markets are far from farm and factory. On the whole it has been fortunate that the railroads have followed a policy calculated to bring about the widest development of markets and the greatest possible range of trade.

There are, however, certain consequences resulting from charging what the traffic will bear, that are not to the general advantage of the public, and which need to be kept clearly in mind both by rate makers and by rate regulators. One of the chief objections to charging what the traffic will bear is that the adoption of such a principle does not insure that resulting rates shall in themselves be reasonable. There is no good reason why railroads should be permitted to absorb all the values created by the transfer of commodities from place to place. Notwithstanding the fact that competitive forces go far to prevent railway charges from being high, and actually do keep most rates within the limits of reasonableness, it is still true that competition is not so universal and so unrestricted throughout industry and transportation as to protect shippers and con-

sumers against the danger of unjustly high freight rates. The fact that the transportation charges on many commodities, even when rates are unduly high, constitute only a small part of the total price of the goods, only serves to make clear that the railroads may exact greater sums than they are entitled to receive and that they may impose a tax on production or consumption which somebody is compelled to pay.

Another basis for freight transportation charges may be found in the value of the commodities to the shipper. It would be theoretically possible to construct a schedule of rates by fixing the charges with only incidental reference either to the cost or to the value of service, but with regard primarily to the absolute and relative values of the articles carried, and there are some reasons why this would be desirable. The absolute increase in the value which cheap and bulky goods, like coal, lumber, iron, grain, etc., obtain by transportation is small per ton of weight, as compared with the addition to the value gained by a like quantity of high-priced commodities, such as shoes and dry goods. A ton of coal worth $2 on the car at the mine may sell for $3 at the ocean pier, transportation having added 50 per cent to its value; whereas, a ton of silk goods may be worth only 1 or 2 per cent more in Chicago than in Paterson, N. J. If the freight rates are based on the value created by the transportation, the shipper of coal will probably pay 30 or 40 per cent of the value of the coal for getting it carried to market, while the shipper of silks and other costly articles will possibly pay the carrier 1 or 2 per cent of their value. Measured in percentages of the values of the commodities, the value of the service is low for costly articles, and high for cheap and bulky commodities.

The policy of charging higher rates upon valuable commodities than upon those of less worth is not to be condemned, but rather to be commended. Indeed, American

railways might go farther than they now do in making the value of the commodity a basis of charge; and might, without appreciable injury to trade, considerably increase rates on high-priced goods. There could be no valid objection to such a policy from the standpoint of the public welfare. The carrier would secure his gross receipts, according to this principle, by taxing the producers of grain a certain per cent of its value, and the various manufacturers and other shippers certain percentages of the values of their goods. The rate of assessment on the producers of bulky articles would necessarily be higher than the rates imposed on shippers of costly goods, but the effect of the application of this principle would be to make the freight charge on high-priced goods more than they would be if made according to the cost or value of the service, and to make rates on bulky commodities lower. Whether the rates of assessment imposed upon different classes of commodities were relatively just would be a question to be determined in the first instance by the carriers and shippers, but would also be a question upon which the state would have the last word, because the state is the final judge of the reasonableness of all transportation charges.

The railway officials who make the rates and fares do not consciously endeavor to follow any of these abstract theories of railroad charges; they study the traffic and the conditions of competition under which it must be carried and seek to "charge what the traffic will bear." They could not make the cost of service their sole guiding principle if they wished; and, indeed, they have no desire to do so. They are in reality concerned with two things: what the one who receives the service can pay, and what rate the rival carrier, if there is or may be a competitor, is giving or is likely to give. In determining what the buyer of transportation can pay, the chief consideration is the value of the service to the shipper or passenger, and the intelligent

determination of that question requires the exercise of sound judgment. Charging "what the traffic will bear" seldom justifies the carrier in exacting *all* the traffic will bear at the time the charges are made, because such rates and fares would prevent the traffic from growing in volume and variety, and would thus interfere with the future prosperity of the railroad. How traffic managers actually make rates and fares in seeking to charge what the traffic will bear is considered in the next chapter.

The chief aims of the traffic official in fixing rates and fares are to obtain a profitable revenue and to secure an increasing volume of business. What he seeks most of all to avoid is a charge that will interfere with the growth of traffic. He realizes that railroad transportation is for most lines a business of increasing returns, and he wants more business, because that means more profits. The traffic officials are not especially concerned with the absolute or relative "reasonableness or justice" of the charges paid by different persons or levied upon different classes of goods, except in so far as an unjust or unreasonable charge may interfere with the profits or the growth of traffic. With the state, however, the primary consideration is the absolute and relative justness or reasonableness of rates and fares. It is the duty of the state to secure to each person just treatment by public carriers. Moreover, this duty must be performed in such a way as to do justice to the carriers and to further the progress of society. The state is, therefore, compelled to seek an answer to the question, What is a just and reasonable rate? Unfortunately, the question cannot be answered with mathematical precision. There is no general formula or rule by which the justice of a rate or fare can be determined; the state officials must content themselves with analyzing and giving due influence to the considerations that should have weight in rate making. If the railroads were owned and operated by the Government,

the state's duty of insuring to its citizens justice in transportation charges would be a somewhat less difficult one, but even then it would not be an easy matter to find and follow the sure path of justice.

As long as the railways are owned by private corporations, a rate for any particular service can hardly be just to the carrier unless it equals or somewhat exceeds the additional costs incurred in performing that service—the expenses that would have been avoided had that service not been rendered. While it is neither possible nor desirable to adjust rates and fares proportionately to costs of service, the demands of justice seem clearly to require that total costs, including a fair profit on invested capital, shall be covered by total receipts, and that the minimum rate or fare shall cover the additional operating expenses incurred by the carrier in performing the particular service for which the charge is made. There would be no theoretical objection, from the standpoint of justice, to an adjustment of charges by which certain kinds of commodities or certain classes of travel should be required to contribute little or nothing toward the joint costs or fixed charges, provided the articles of high value and the persons who travel luxuriously can be and are assessed rates and fares that will yield enough to pay the fixed charges and joint costs; but charges that did not cover the "additional" costs of operation would be unjust to the railroads and would work a detriment to the public by checking the growth of the railway mileage and the development of traffic.

No railway charge can be greater than the value the shipper or traveler can gain by securing the transportation service desired. A charge greater than the value of the service would be objectionable both because of its injustice and because it would prevent the performance of the service. No one desiring a service will pay more than the service is worth to him, and traffic managers are, of course, careful

to keep the charges below this maximum point; but between this upper limit, set by the value of the service, and the minimum charges, fixed by the extra costs incurred by performing a particular service, there is a wide range through which rates and fares can and do vary. Where within this range the line of justice is to be drawn, where charges shall be fixed so as to prevent or minimize unjust discriminations, constitutes the difficult problem of government regulation. Experience has shown that discriminations of a most detrimental character will be made unless prevented by government authority.

Not every discrimination is unjust. If such were the case, justice among shippers would consist in charging every person a like sum for the same or essentially similar services. No two carriers perform their services under identical circumstances. One railroad may have easy grades, few curves, a traffic of about equal volume in each direction, and may be free from competition with a water-route. Another company's road may have steep grades and sharp curves, and its traffic may be carried mainly in one direction and in competition with a line of vessels. It is reasonable that the charges over the second of these roads should be higher than over the first. Indeed, so various are the factors affecting the reasonableness of railroad charges that the state can formulate no general rule by which to test the reasonableness of all rates and fares. In deciding upon the justice of charges, each company and each class of traffic must be considered with reference to the conditions peculiar to the company and to the class of traffic in question. In legislation, to secure relative justice among those served by the railroads, the state can prohibit only what is embodied in the third section of the Interstate Commerce Act and make it unlawful for a carrier to give "any undue or unreasonable preference or advantage to any particular person, company, firm, corporation, or locality, or any

particular description of traffic." The determination of what constitutes an undue or unreasonable preference must be left to the judgment of the courts and expert officials of the government.

In reaching a decision as to the reasonableness of railway charges, the officers of the state are in duty bound to consider the interests of the carrier, the individual shipper, and the general public. The carrier's minimum charge is fixed by the "extra" cost due to performing the service in question; the shipper's maximum payment is the value of the service; to locate the just charge lying intermediate between these two extremes, consideration must be given to the cost of the service to the carrier and the conditions of competition under which the service is performed, the value of the service to the one who receives it, the value of the article, and its importance to the industrial progress of society.

As the state endeavors more consciously and intelligently to realize justice in transportation charges, greater attention will be given to the relation of rates and fares to the interests of society. The carrier is entitled to adequate remuneration for his labor, his capital, and his risks; the shipper and passenger are entitled to charges that are absolutely and relatively reasonable; the public as a whole may justly insist on such a distribution of those charges among different kinds of commodities and classes of passengers as will be most advantageous to society. One way, and probably the best way, to accomplish this "socialization" of rates and fares, is to extend the taxation principle of railway charges —to fix rates more largely with reference to the value of the commodities, and to fix fares so that they will more nearly correspond with the abilities of different classes of travelers.

The socialization of rates and fares—the collection of the total revenue to which the carriers are entitled by fixing charges primarily with reference to the needs of society, and

only secondarily with regard to the cost or value of each particular service—is the goal toward which the public will be led in its efforts to secure and enforce justice in transportation charges. However, justice is not to be had by discovering and applying any infallible rule or theory. Justice is a question of judgment, and the factors affecting judgment must be different for each case decided, and must change from time to time as society alters its ethical standards. The purpose of this chapter has been to analyze briefly the factors which do and properly may influence the judgments of the carrier, the shipper and passenger, and the general public as regards railway charges.

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CHAPTER XXII

RATE MAKING IN PRACTICE

The problem of rate making different for private and state railroads, 349. Classification the first step in making freight rates, 350. The machinery for making freight rates, 352. Considerations which influence the decisions of traffic officials, 354. Railroad coöperation in rate making, 355. Rate systems in the United States, 356. The trunk line rate system, 356. The southern rate system, 357. The western rate system, 358. Transcontinental rates, 359. Import and export rates, 360. The machinery for making passenger fares, 360. The problem of fixing passenger fares as compared with the freight rate problem, 361. The general tariff policy of American and foreign railroads, 363. References, 364.

THE problem of making rates and fares for the railroads in the United States and other countries where the roads are owned and operated by private corporations differs from the task of fixing the charges in countries where the government is the owner and manager. The sole aim of the corporation is to secure business profits; the purposes of the state are fiscal and social. The corporation will presumably seek to discover and enforce such charges as will in the long run yield maximum net profits to the owners of its property; the state will be inclined to adopt rates and fares no higher than are required to secure a small net revenue after meeting the expenses of operation and maintenance and paying the interest on the invested capital. In a few instances, as in the case of Prussia, state railroads have been managed with a view to making them bear a considerable share of the fiscal

burdens; but even then the charges levied on the public have been adjusted also with reference to the accomplishment of military, industrial, or other social aims.

The government usually has the advantage of a greater degree of monopoly in fixing its charges than is possessed by the corporation. However, this general rule has exceptions, and state systems as well as private ones are subject to interregional competition, both domestic and international. Exceptions to the rule are found in countries where the state owns only a part of the railroads and competes with the corporations controlling the private lines; also in France, where each railroad corporation has been granted by the state a monopoly within the section of country served by the company's lines. The tendency is to change partial into complete state ownership, because the accomplishment of the purposes of government management can best be secured under the conditions of monopoly resulting from the elimination of interline competition. So, in general, it may be said that, although the competition among private railroads has many degrees of intensity and the power of the governments owning railways to fix charges is more or less limited, the corporations have competitive conditions and the state has monopoly conditions to deal with in adjusting rates and fares.

It is necessary to simplify the task of rate making by grouping as many as possible of the several thousand kinds of commodities carried by the railroad into a small number of classes, and charging like rates on all articles in the same class. The necessity for classification becomes greater with the increase in the quantity and variety of traffic handled. In 1886 the classification most used by the railroads north of the Ohio and Potomac enumerated 1,000 commodities and had six classes. The following year it was superseded by Official Classification No. 1 with 2,800 listed articles, and the number has now become five times that figure and

there are 14 ratings or groups of articles. The Western and Southern classifications have the same number of articles and contain respectively 17 and 16 classes. This is due not only to the addition of new articles to the traffic carried by the railroads, but also to the more detailed classification of commodities, necessitated by the growing specialization in manufacturing and mercantile business.

The technical knowledge required in classifying commodities and the considerations which determine how articles of freight shall be grouped were well stated in the *Eleventh Annual Report of the Interstate Commerce Commission.* The officials intrusted with the work of making classifications

> take into account whether commodities are crude, rough, or finished; liquid or dry; knocked down or set up; loose or in bulk; nested or in boxes, or otherwise packed; if vegetables, whether green or dry, desiccated or evaporated; the market value and shippers' representations as to their character; the cost of service, length and direction of haul; the season and manner of shipment; the space occupied and weight; whether in carload or less-than-carload lots; the volume of annual shipments to be calculated on; the sort of car required, whether flat, gondola, box, tank, or special; whether ice or heat must be furnished; the speed of trains necessary for perishable or otherwise rush goods; the risk of handling, either to the goods themselves or other property; the weights, actual and estimated; the carrier's risk or owner's release from damage or loss. All these circumstances, bewildering as they appear to a layman, are comparatively simple to the expert.

Since 1886 the railroad companies have intrusted the classification of freight to the classification committee in which they are represented—the Official, Southern, or Western. Each company reserves the right to fix the rates charged on each class of freight, and in theory does independently determine the rates; although there is necessarily a large

degree of coöperation among competing companies in the making of rates. Although the classification includes all articles, each railroad company reserves the right to give certain articles commodity rates lower than they would have under the class rates; that is, each important company transports a large number of articles at "commodity tariffs." (Consult Chapter X.) It has never been possible to charge all articles rates determined by their classification, but the railroads are trying to reduce the number of exceptions, and as the conditions of interrailway competition become increasingly stable, the majority of the commodities now having a special tariff can doubtless be charged rates they would have under the classification, although it is probable that some commodities—petroleum, live stock, fresh fruit, etc.—will always be given commodity rates.

The classification of freight is the first step in rate making; the second, and more difficult one to take, is the determination of what the charges per hundred weight shall be for each class of goods and for the large number of individual articles given commodity rates. A single classification applies to a large territory but the rates must be worked out for the traffic of each city, or at least of each section, with every other city or section served by the railway company making the rates. Every company must prepare a large number of "class tariffs" and "commodity tariffs" to cover the freight handled between points on its own lines; and in addition to preparing these "local" tariffs, it must concur in a host of "joint tariffs" with other companies, applying to through traffic delivered to or received from connecting carriers by rail and water.

The making of freight rates requires the service of a large and well-organized corps of expert officials and employees. The administrative organization by which the work is done varies somewhat with different companies; but the practices of the several railways have enough similarity to make pos-

sible a generally applicable description of the machinery or methods of rate making. Usually the official rate maker is the general freight agent, every rate sheet being issued over his signature. On lines where the traffic is large the work of rate making may be subdivided, a general freight agent having control of the process with regard to a particular variety of traffic, such as through, local or coal traffic. The largest companies also have a freight traffic manager, to whom the general freight agents are subordinate. In deciding difficult rate questions the freight traffic manager will be consulted, though, as far as possible, this official confines his attention to matters affecting the general rate policy of his company, and to advising the traffic vice president where the company had best seek to develop traffic. The vice president in charge of the traffic department may overrule any of the decisions of the general freight agents and of the freight traffic manager, and even the president and board of directors may take part in the final decisions regarding rate policy, especially when there is a question of a general increase or decrease of rates.

The general freight agents and their supervising officers are aided by a large number of minor officials and employees, who furnish information and make recommendations. Division and district freight agents study traffic conditions in the territory to which they are assigned, freight solicitors study local conditions and consult with shippers, and local freight and station agents also keep in touch with the commercial conditions of their particular localities, while a number of special agents are employed to study industrial conditions and promote the establishment of industries along the lines of their company. From the written information sent in by all these officials and from personal consultation with them the rate making officials gather the material upon which to base their decisions concerning the rates to be charged.

When the traffic officials set about fixing rates they must

ascertain as nearly as possible what the charges for various services *ought* to be and what they *may* be. The decision of what ought to be charged is affected by the theory held in regard to railroad charges—whether the principle of cost should be given as much weight as possible, whether the value of the service should be the chief consideration, or whether the value of the article should be the determining factor. The traffic manager probably does not endeavor to apply any one of these theories strictly, but he is very careful to inform himself as to the ability of each article to pay the charges he may decide upon. To estimate the ability of an article to pay freight (1) a thorough knowledge must be had of the costs of production, (2) of the market prices at different points, (3) and of the nature of the demand for the article (4) whether the article is considered a necessity or whether some other commodity can readily be substituted for it. The service of freight transportation consists of taking goods from the producer or maker to the user, and the person who fixes the rates for that service must study the conditions of production and the nature of the consumer's market. Transportation charges must be such as will produce a net revenue for the carrier and will stimulate the development of traffic.

In addition to ascertaining what the shipper is able to pay, the rate maker must know the conditions of competition to be met. There may be rival carriers bidding for the same traffic; or, if not, probably the producers and carriers of other sections of the country or of other parts of the world are trying to get the trade of the markets reached by the rate maker's road. The traffic manager will seek to charge "what the traffic will bear" and continue to increase, and he will study all factors affecting that problem.

In general it may be said that the decisions of a traffic officer with respect to rates are the resultant of four forces: (1) The charges he makes must have a proper relation to

those made by competing roads and routes, and in spite of railway integration there is much actual competition in the transportation business; (2) the interest of the shipper must be considered, what he can pay for transportation and what charges will permit his industry to flourish and the traffic of the railroad to increase; (3) the revenue of the railway must be safeguarded. As far as it is practicable, each particular rate must cover operating costs and contribute something toward fixed charges and profits, while the rates as a whole must surely be kept on a level that will maintain the company in a prosperous condition. (4) The requirements of the public as a whole must be complied with. In many States maximum rates are fixed by statutes or by commissions; in other States commissions have the power to revise particular rates; while the rates on interstate traffic, which is vastly more important than the traffic that does not cross state boundaries, are subject to the revisory control of the Interstate Commerce Commission.

Before the days of pooling and traffic associations each railroad company acted independently in making rates and fares. The schedule of charges was worked out by the officials of the traffic department and accepted with or without amendment by the executive officers of the company; but on competitive business the rate making was in reality placed by the company in the hands of the local agents and the solicitors of freight, by giving those officials the power to deviate from the scheduled charges if such action was necessary to secure or hold traffic. Every freight agent was made to feel that he must get business, and the methods he was permitted or expected to employ were often objectionable. Discriminations of many kinds were practiced. With the progress of railway coöperation more responsible methods of making and maintaining rates were followed. Through their pooling arrangements and traffic associations the companies sought to unite in fixing and maintaining such

charges as seemed reasonable to the several roads concerned.

Pooling became unlawful in 1887, and all formal rate agreements were declared illegal ten years later. Then, in theory at least, it became necessary for each company to act independently. To secure the maintenance of rates most of the companies sought to place the power of fixing or altering rates strictly and solely in the hands of their higher traffic officials, though they maintained the traffic associations, at the meetings of which it was possible, without violating the law, to discuss informally all questions as to changes in rates proposed by individual companies. These measures had a steadying influence, but they did not make deviations from published rates impossible or improbable. The Elkins Act of 1903 and the Hepburn Act of 1906, however, made it possible to restrict the giving of rebates and since the passage of these laws there has been comparatively little unregulated competition.

Rate making in the United States has presented many difficult and complex problems. Extensive territorially the country possesses a wide variety of geographic, social and economic conditions which have affected materially the evolution of rate structures. The dissimilar conditions prevailing in the eastern, southern, trans-Mississippi and western sections of the country have brought into existence in all of these sections peculiar rate systems, and the effect of international competition on foreign trade has required the creation of a system of rates for export and import traffic different from the rates applying to domestic traffic. In addition to these general rate systems there have been developed too a multitude of minor rate structures suited to the varying needs and demands of local industrial conditions.

The chief feature of the rate system in the territory north of the Potomac and Ohio Rivers and east of the Mississippi is that the primary factor considered in fixing all charges is the distance of the haul. Virtually all through rates are

based on the rates between New York and Chicago. Rates on traffic moving eastbound from points west of the Buffalo-Erie-Pittsburgh line to New York and inland points east of that line, as well as the rates on westbound traffic between the same regions, are a percentage of the New York-Chicago rates, the percentage being roughly the ratio which the distance between any two points in question bears to the distance between New York and Chicago. Rates on traffic moving between points west of the line and the other important north Atlantic ports, Boston, Philadelphia and Baltimore, vary from the rates to and from New York by a fixed differential, the amount of the differential depending on the class of traffic; while virtually all of New England has the same rates on through traffic to and from the West, these rates also being based directly on the New York rates. Tariffs on local traffic carried throughout this entire territory are for the most part distance tariffs, and though the charges do not vary strictly in accordance with distance in all cases, the long and short haul principle is generally adhered to.

In the territory south of the Ohio and Potomac Rivers and east of the Mississippi the rate structure is known as the basing-point system. Before railway lines were built in the South the rivers were the main highways of traffic between the interior and the seaboard, and the chief centers of trade were the seaports and cities located on navigable streams. The first railroads constructed, naturally, connected the ports with inland markets, and active competition at once began between rival rail and water routes. In order to secure a share of the traffic the railroads were compelled to meet the rates of the water lines at competitive points, while at non-competitive points, they were able to charge higher rates, even though the point at which the higher rate was charged might be on the way to the competitive center. It was possible, and it became the practice, for a railroad

serving a trade center at the seaboard or on a river to charge all local points in the district rates equal to the sum of the through rate to the competitive point and the local rate into or out of the city where the water route was available. As the railway net grew and inland cities not situated on rivers became important railway centers the railways pursued the same policy with respect to the rates on traffic to and from the local non-competitive points in the district of the competitive railway center. This system of rates necessarily contained numerous violations of the long and short haul principle. Some of the discriminations practiced were decidedly unjust and they have been a prolific source of complaint before commissions and courts. When the Railway Rate Act of 1910 was passed making illegal all violations of the long and short haul principle which do not receive the sanction of the Interstate Commerce Commission, the railway companies operating in the South found it necessary to make a large number of applications to the commission for permission to maintain their existing schedules of rates. Recognizing the conditions which underlie the basing-point system, the commission has wisely refrained from reconstructing the rate structure in an extensive manner, and has confined its changes to correcting excessive discriminations.

In the region west of Lake Michigan and of the Mississippi River south of Wisconsin a third general system of railway charges has been developed, the salient characteristic of which is a general adjustment of rates by fixed differentials above or below the rates at the dominating trade centers and at main river crossings. This general adjustment of rates by fixed differentials is supplemented to some extent by making the charges at secondary competitive points percentages of the rates of primary centers of industry and trade. The rivalry of Chicago and St. Louis as distributing centers has had a marked effect on the rate struc-

ture in this region; and the fact that the railroads between the Mississippi and Missouri Rivers for a long time had no physical connection with roads east or west of the territory inclosed between the rivers gave the river-to-river rates a position of dominating influence in the general fabric. The rates between this section and the regions west and southwest to the mountains are in general such combinations as will equalize competitive conditions among rival producing sections. The State of Texas has a unique system of "graded and maximum" rates upon intrastate traffic, the rates rising in direct ratio to distance until a certain maximum amount is reached, after which they are the same for all longer distances. On long-distance interstate traffic entering and leaving Texas the rates are virtually the same throughout most of the State.

The rates applying to traffic between the eastern part of the United States and the Rocky Mountain and Pacific States, or transcontinental freight rates, have been strongly influenced by the competition of ocean carriers operating by way of the Isthmus of Panama and around South America. Out of the conditions created by this competition a rate system has been developed with the following main features: (1) Blanket or common rates are given on westbound traffic from most points east of the Mississippi River to the Pacific coast. Blanket rates also apply to some of the traffic moving from the western coast to points east of the Mississippi River though (2) upon most eastbound and upon some westbound traffic, graded zone tariffs have been established. (3) The rates on traffic westbound to intermediate points in the Rocky Mountains have usually been higher than the through tariffs, the higher charge being fixed by the addition to the through rate of either fixed amounts or the local rates back from the Pacific terminals. The rates to the intermediate points violate the long and short haul principle and have been a source of much complaint, but the

Interstate Commerce Commission has frequently sanctioned such discrimination. During the World War the absence of competition via the Panama Canal resulted in the raising of rates to terminal points to an equality with rates to mountain points. With water competition now restored it is probable that many terminal rates will again be reduced.

On many commodities imported into and exported from the United States the rates between seaports and interior markets are less than the rates on the same commodities shipped in domestic trade. The wide variety of routes which this traffic may take, the low rates of ocean transportation, and the trade rivalry of seaports are the chief conditions which act to bring about this result. Lower rates on certain imported goods have served to limit the effect of tariff duties and have benefited manufacturers and traders in many sections of the country.

The machinery for the making of the passenger fares of a large railroad company is analogous to that which establishes rates on freight traffic. The general passenger agents have direct charge of making the fares, one agent usually directing the work for local traffic and another directing the work for through traffic. As is the case with the rate decisions of the general freight agents, the decisions of the general passenger agents may be overruled, the higher supervising officials being the passenger traffic manager, and the traffic vice president. The president and board of directors may direct the policy of the company in regard to fares, though in practice they interfere but seldom. For the information upon which to base decisions concerning fares to be charged the general passenger agents depend upon district and division passenger agents, local agents, solicitors, and special agents. Joint fares are made in coöperation with the traffic officers of connecting lines and fares on competitive traffic are subject to the informal coöperative action of passenger traffic associations.

The problem of fixing passenger charges differs in several particulars from the task of making freight rates. (1) In the first place, classification in the passenger service is a simple matter, and when once decided upon presents no further difficulty, as does the classification of freight, which is a perennial question requiring daily consideration. (2) Competition in the passenger service is less keen than in the freight service, and of a different nature. (3) In the freight business it is the rivalry of producers and shippers that does most to force down rates; whereas, in the passenger service no such pressure is exerted. Travelers do not singly, or collectively, to much extent, bargain for low fares. The ordinary ticket represents a small purchase—averaging barely 66 cents in the United States and much less in most other countries—and there is but little incentive for the passenger to endeavor to secure a special fare. Moreover, (4) the struggle among railroad companies to secure the competitive passenger business is far less intense than is their effort to attract freight traffic. The gross revenue derived by the railroads of the United States from their freight business is two and six-tenths times the receipts from the passenger train service, and if it were possible to ascertain the net profits attributable to each branch of the service, it would be found that the profits assignable to freight transportation are more than two and six-tenths times the net profits secured from carrying passengers.

Another reason why the railroads are less eager to secure passenger business than freight traffic is that reductions in charges—the most usual way of increasing traffic—are less effective in stimulating ordinary travel than they are in increasing freight movement. With the exception of the short-trip excursion travel, the cost of the railroad ticket is but a part, and usually the minor portion, of the expenses of the passenger. Most persons travel for business purposes, and the cost of the railroad ticket has but little weight

with them. There is, however, a large and growing amount of traveling for pleasure, and that is capable of stimulation by reduction in fares. Indeed, as was said in the chapter on The Passenger Service, the American railroads have done much less than European experience has shown to be possible in the development of low-fare travel.

Though the struggle of rival lines for the passenger business is less intense and unintermittent than is true of the freight traffic, the railways have always sought to develop their competitive and non-competitive passenger traffic; but the intercompetition of American roads has done more to increase the speed, comfort, safety, and frequency of the passenger service than to lower the fares. Passenger charges have declined somewhat, but relatively little as compared with freight rates. The average earnings per passenger per mile for the railroads of the United States as a whole were but 6 per cent less in 1901 than they were in 1891; whereas, the decline in ton-mile earnings had been over 16 per cent. In the year 1906 the passenger-mile revenue, 2.003 cents, was the same as it was in 1900, and in 1914 it amounted to 1.982 cents. Since 1914 the charges for passenger travel have been greatly increased. The United States Railroad Administration raised the general level of fares to 3 cents a mile, and the Interstate Commerce Commission permitted a further increase of 20 per cent to become effective in August, 1920.

The traffic officials are usually under less pressure in fixing fares than in deciding on rates. There have been wars over competitive passenger traffic, some of which have been violent; but their effects have been slight as compared with those resulting from wars involving freight rates. Discriminations in passenger charges have been and are fewer and of less consequence than those connected with freight rates. It has been easier for the railways to coöperate in making fares than in making rates.

The general tariff policy of the railways of the United States has been determined almost entirely by commercial considerations. This has been so both because the roads are owned by private corporations, and for the reason that the Government has as yet done little to require the companies to construct their tariffs with reference to the accomplishment of political or social aims. The same is true of the railroads of Great Britain; but in France, although the lines are owned and operated by corporations, the Government has aided the companies largely, and has influenced their tariff policy very considerably. In Austria and Hungary the governments have nationalized most of the railroads, and have put in force a system of charges intended to increase travel, and to bring the political and commercial cities of the country into closer touch with the outlying portions of the national domain. In the German states, where most railroads are owned and managed by the Government, rates and fares have been fixed with a view to securing a surplus of net revenue, to protecting German industries against foreign competition, to aiding in the exportation of German productions, to strengthening the efficiency of the military forces of the state, and to furthering numerous philanthropic and educational aims. In Australia and India the governments have built roads mainly to promote the industrial development of the countries.

Different practices have prevailed in different countries as regards the state's policy concerning railway tariffs. In all countries, whether the railroads are owned by the state or by corporations, there is a tendency to give increasing weight to social considerations in deciding upon railroad tariff policies. This is true even in the United States, where, until within a few years, the Government permitted the railroad corporations, without state interference, to make such rates and fares as they thought would promote their traffic or revenue.

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Consult also the references to Hadley, Seligman, and Weyl at the close of the preceding chapter.

PART IV

THE RAILROADS AND THE STATE

CHAPTER XXIII

THE RAILROADS AND THE STATE. REGULATION IN THE UNITED KINGDOM AND GERMANY

The twofold relation of the government to the railroads, 367. The form which the State's relation to railroads may assume, 370. Railroads of the United Kingdom received no state aid, 371. Early competition and consolidation in Great Britain, 372. Railroad coöperation, 373. British regulation of railroad consolidation, 374. Early regulation of railroad rates in Great Britain, 375. The Act of 1854, 378. The Act of 1873, 379. The Railway and Canal Traffic Act of 1888, 381. Maximum rate laws, 383. The Act of 1894, 384. British railroads and the war, 385. The Ministry of Transport Act of 1919, 387. The Railways Act of 1921, 389. Early railway policy in Germany, 390. The nationalization of Prussian railways, 394. The Prussian railway organization, 395. The results of railway nationalization in Prussia, 398. German railways and the war, 400. The present railway policy of Germany, 400. Railway policies of other countries, 402. Conditions which determine the railway policy of a state, 404. References, 405.

THE government's relation to the railroads is necessarily twofold: that of aiding and of regulating or controlling. The extent and form of the assistance given by the state to railroad building and operation varies with different countries. The people of some nations prefer to have their railroads built and managed directly by the government; in other nations the preference is for the construction and control by corporations chartered by the state; but even in the latter case the aid of the state is necessary. The state must grant to the corporation "the right of eminent domain" in order to enable the corporation to secure the real estate required for its roadway and structures. Besides aiding

the corporation in this manner, the government—local, state, and national—has frequently contributed or advanced a part of the capital required by the company for construction purposes, and in some foreign countries the state has guaranteed to private investors a stipulated minimum rate of interest or dividend on their investments.

Transportation being a service of a public nature, it is the duty of the government to regulate its performance. This regulation may be accomplished by state ownership of transportation agencies or by the governmental supervision of those agencies in the ownership and under the management of private persons or corporations to whom the state may have intrusted the business of transportation. Some transportation agencies are invariably owned by the government; in regard to the others the practice of the different states varies. The postal service, for instance, is everywhere a state monopoly, the highways are usually supplied by the government; but the telegraphs and railroads are owned and operated sometimes by the state and sometimes by chartered corporations.

State ownership gives the government complete power of control; and the question of regulating transportation becomes one of defining and adhering to the proper policy which the government should follow in managing the agencies which it owns. However, when one comes to analyze closely the principles which should prevail in the relations of the government to railroads and other transportation facilities, it becomes evident that whether the transportation service is performed directly by the state or its execution is intrusted by the state to individuals and to corporations, it is equally the duty of the state to make sure that the service shall be so performed that the greatest possible measure of justice may be secured by each citizen. The ideal of the greatest good to the greatest number must everywhere pervade the service; if the state performs the

service it must follow that ideal in its management; if corporations act for the state, they must be required by the state to adhere to that general principle. Unrestrained individualism in railway management is a principle which corporations cannot be permitted to follow.

The history of the relations of the railways with each other in the United States, an account of which was given in preceding chapters, shows very clearly that the state cannot safely rely upon the competition of privately owned railroads with each other to regulate transportation by rail. The general adherence of the American public to that fallacy during the first four decades of railroad history resulted in the origin and development of most of the objectionable practices which have constituted the so-called "railway problem." Moreover, experience also shows that the public must give heed to the manner in which the state performs its service when the railroads are owned and operated by the government. When a state owns a part of the railway net of a country and competes with private companies, it is tempted to resort to the practices commonly adopted by competing companies. If the state manages all the railway lines, its railway policy may be determined with regard to the fiscal needs of the government, or may be made a part of a system of protecting home industries, or the railroads may be built and operated so as to further the military power of the country. These may all be worthy purposes, but they prevent the development of the transportation system best adapted to general economic needs of the country. In other words, the state may not make the technical development of its railroads and the increase of the mileage and the facilities the first considerations, as corporations would.

Although some form of governmental control of railroads is now universally recognized to be a necessity, it is by no means easy to decide what form of control will most conduce

to the public benefit. Whether the regulation of railway transportation by our Federal Government and the States should take the form of the purchase and operation of the railroads under their jurisdiction is a question that has been much discussed. It is, indeed, a difficult question, and, before considering it, we shall do well to review the relation of the railways to the state in some of the larger foreign countries, and study our own experiences as regards railway regulation.

The state's relation to railroads, in the matter of regulation and control, may take one of four different forms: (1) Private ownership and private operation of railroads, the state chartering corporations to act as its agents for the performance of railroad transportation; (2) private ownership and government operation, the state leasing the lines from the corporations which have invested the capital in building the roads; (3) government ownership and operation; (4) government ownership and corporate operation, the state leasing its roads to corporations. The workings of each of these four forms of relationship have been illustrated by the experiences of one or more important countries. The tendency is everywhere either toward a more careful public regulation of private roads or toward the nationalization of the railroads and their management by the government.

Of the leading European countries the United Kingdom has carried out most consistently the policy of private ownership and operation. The history of railway development in the United Kingdom seems especially worthy of study by those who wish to understand and pass judgment on the American policy of railroad regulation. The system of regulation established by the British Government is more instructive for us than that of any other foreign country, because the conditions of ownership and management are

similar to those in this country and because the laws of both countries have been designed to meet virtually the same problems. In some instances our laws have been modeled in a large measure after those of England, though on the whole the systems of regulation in the two countries have been dissimilar.

Unlike most countries, Great Britain did not aid private corporations in the construction of early railroads.[1] The country was so thickly settled and the volume of business for rail transportation was so large that it was virtually certain that the railroads when built would secure a remunerative traffic. Capitalists and investors were more than willing to provide all the funds needed. Indeed, the British Government felt that the country was so well supplied with transportation facilities by its close network of canals and improved highways that a company proposing to build a railway was required to convince Parliament of the public necessity for the new road. Extreme opposition was always met with from the individuals and corporations engaged in transportation by canals and highways, and the problem of securing a railway charter was in the early days exceedingly difficult. Until 1864 no railway could be constructed in Great Britain except by special authorization of Parliament,[2] and one of the large items of expense of the early corporations was the cost of securing charters. The money spent for this purpose went mainly as fees to attorneys, who were employed to inform the

[1] The statement applies to the railroads in Great Britain. Some railroads in Ireland received government aid.

[2] A Railway Construction Facilities Act was passed in 1864 (amended in 1870) by which the Board of Trade are authorized to grant a certificate of permission to corporations or individuals proposing the construction of a railway line. If, however, there is any objection to the granting of the certificate by the Board of Trade, authorization must be secured from Parliament. Such certificates as

parliamentary committees as to the desirability of the proposed work. These expenses appeared subsequently in the capital account of the railway companies, and they are one of the minor causes of the high capitalization of British railways.

As was the case in the United States the early railways were short lines, many of which were competitive. In 1843, twenty years after Parliament granted the first railway charter, there were 70 railway companies in Great Britain with a total mileage of only 2,100 miles, or an average to each company of 30 miles. During the next four years more than 600 small lines were chartered, and for a time the average length of line actually decreased. Competition among many of these roads was for a time very active, but the process of amalgamation and combination was soon begun among both competing and connecting lines. The process, once started, proceeded rapidly and now for many years by far the greatest part of the railway business of England has been under the control of ten large companies, each serving a fairly distinct section of the country. Many of the larger commercial centers of the country are served by two or more of these companies, but arrangements for controlling competition for the traffic of such centers have always been worked out.

Several means of consolidation and combination have been employed by the English railway companies. Mergers and leases have been common, and other methods have been used, such as the "working union" which is similar to a merger, the "working agreement" which is similar to a lease, and "running powers," by which one company is authorized to run its locomotives and cars over the lines of

are granted by the Board of Trade must be submitted to Parliament and if Parliament takes no adverse action within six weeks, the certificate becomes effective. Very little use has been made of the provisions of this law.

another company. In cases where it has been impossible to bring about the consolidation of competing lines in one form or another, such lines have combined in various ways to avoid competition. The most common forms of combination among competing roads have been the money pool and the formal rate agreement. Numerous "conferences" of British railways have been established since 1860 for the purpose of making agreements respecting rates on competitive traffic, and pooling has been practiced extensively by British railways since a very early day in their history.

One important feature of British railway organization which has enabled the companies to secure harmony of action in their competitive relations has been the Railway Clearing House. This institution was established in 1847 as a voluntary association of a few companies for the purpose of establishing joint arrangements with regard to caring for interline traffic and adjusting the division of rates. Three years later it was incorporated by Parliament. Other railway companies soon became members of the association, and it quickly became a prominent and valuable feature of the British railway system, serving as an agency through which the business and financial relations of connecting lines could be adjusted, and through which satisfactory arrangements concerning competitive business could be worked out by rival companies. Most of the "conferences" of competing lines have their meetings at the Clearing House in London, and the associations are known generally as "clearing house conferences."

In the United Kingdom, as in the United States, railroad regulation has been a part of the general problem of controlling business monopolies. In both countries the law makers considered it necessary, in dealing with the railroads, to place certain checks upon the development of railroad consolidation and to undertake the regulation of railroad rates.

The British Parliament has never enacted a law forbidding the consolidation of competing railroads, On the other hand the railroad corporations have not been permitted to combine at will. Until 1921 the British policy with respect to the actual merger of railroad companies was to require the express authorization of Parliament for each consolidation. Destructive competition between rival companies led to movements, on several occasions, to have Parliament enact laws giving to the railroad companies general authority to effect any desired combination. In 1846 and again in 1853 committees of the House of Commons investigated the British railroad situation, and though in each case the committee went on record as not being opposed to the principle of railroad consolidation, both recommended that each proposal for a railroad merger be considered on its merits and that no general authority to effect combinations be granted. A slight deviation from this policy came in 1863, when a law was enacted authorizing two or more railroads to enter into "working agreements" without the specific sanction of Parliament, provided such agreements should be ratified by the shareholders of the interested companies and approved by the Board of Trade.

In 1921 the British policy with respect to railway consolidation underwent a complete transformation. As a measure of reconstruction, following the termination of government control of railroads, a Railways Act was passed, one of the cardinal features of which was the requirement that the railroads of Great Britain should be amalgamated into four great systems, the Southern group, the Western group, the North Western, Midland and West Scottish group, and the North Eastern, Midland and East Scottish group.

Though the process of railway consolidation in the United Kingdom was for years impeded by the necessity of securing special sanction from governmental authority, there was practically no interference with the measures taken

by separate rival lines to control competition. No attempt has ever been made to question the legality of rate agreements, and pooling has never been prohibited by law. The validity of several early pooling agreements was discussed in English courts and it was thought by some that such agreements were illegal because they rested on no statutory or charter rights of the companies. However, a definite court decision was made in 1861 upholding a pool which had been organized by several railroads engaged in handling traffic between Scotland and England, and since that time pooling agreements affecting competitive traffic have been accepted as legal.

In the *regulation of railroad rates* the British Government long followed the general plan of establishing maximum rates by statutory enactment, leaving the enforcement of the statutes to the ordinary law courts or to various special boards and tribunals. At the time of the introduction of railroads into the United Kingdom there was general adherence to the doctrine of non-interference on the part of the state with economic activities. It was thought that the state should leave industry and transportation alone and that competition among rival producers and carriers would regulate prices and charges in a satisfactory manner. However, Parliament thought it might be possible for the owners of the railroads to charge those who used the lines more than would be just and from the outset the maximum tolls which might be charged were stipulated in railway charters.

The earliest charters were copied, with little modification, from the charters that Parliament had for years been granting to turnpike and canal companies. It was assumed that the railroad was only an improved highway, and that the railway companies would merely own the track, charging tolls to carriers and others who would use it for their horses and vehicles, in the same way that tolls were charged

for the use of canals and roads. Soon, however, the railways were given permission to supply tractive power themselves and tolls for this service were authorized in the charters, and a short time later the companies were empowered to act as carriers and collect a third charge for their services in conveying traffic from place to place. As the railways came to engage more extensively in the carrying business and acquired a monopoly of the tractive power on their own lines the charges for all three services were included in single tolls, the maximum amounts of which were stipulated in all the charters.

It was soon discovered that it would be unsafe to rely upon the forces of competition and upon charter maxima for protection against unjust charges and unreasonable discriminations. Competition was quickly brought under control either by the consolidation of rival lines or by the establishment of rate agreements and pools. The maximum rates of the charters afforded no protection whatever against unreasonable discriminations, inasmuch as a railway company could charge various shippers as many different rates as it chose as long as no rate was above the stipulated maximum. Moreover, the acts granting charters and establishing schedules of maximum rates became so numerous that it was almost impossible in many cases to ascertain what the legal maximum rates really were, though investigations usually revealed that the rates actually charged for the conveyance of traffic were lower than the maximum rates stipulated by special acts. However, all railway companies adopted the practice of imposing extra charges for terminal services of loading, unloading, collection and delivery, and by this means actual rates on freight shipments were sometimes made higher than the maximum charges established by law.

The first general law in any way affecting the regulation of railway charges was passed in 1840. It authorized the

Board of Trade to enforce all Acts of Parliament regulating railways, including the special acts granting charters to companies. Under the authority of this law the Board of Trade could prevent railway companies from charging tolls in excess of the maxima allowed in their charters. This provision had no effect whatever on the level of rates.

In 1844 Parliament passed the Cheap Trains Act, the author of which was William E. Gladstone. This measure directed the railroads to run daily in each direction on their lines a train carrying third-class passengers, at a fare not to exceed one penny a mile. Such trains were to stop at all stations if necessary, move at a speed of not less than 12 miles an hour, including stops, and the coaches for third-class passengers were to afford ample protection from the weather. The Board of Trade were given the power to determine the schedule of the trains and also were authorized, if they saw fit, to dispense with any of the regulations concerning the service, except that respecting the fare. The railway companies were exempted from taxation of the gross receipts derived from this service.

The next year (1845) witnessed the enactment of the first law applying in general terms to railway rates. A section of the Railways Clauses Consolidation Act provided that tolls should be charged "equally to all persons" on traffic carried "over the same portion of the line of railway under the same circumstances." Inasmuch as such traffic rarely existed this regulation had virtually no effect on charges, and railway companies continued to impose such charges within their charter maxima as they chose, subject only to the regulation as to third-class passenger service contained in the Cheap Trains Act. In 1846 Parliament created a Railway Commission, to which was given the supervisory powers over railroads previously exercised by the Board of Trade. The authority of the Commission was so limited that it had little influence, and after an ex-

istence of five years it was abolished and its powers once more vested in the Board of Trade.

The railway business of the United Kingdom developed rapidly between 1840 and 1850, and as traffic and travel expanded in volume the complaints concerning unreasonable and discriminatory rates increased in number. The railway companies refusing to redress the grievances of shippers and travelers, it finally became necessary for the government to adopt a stronger policy with respect to the regulation of railroad charges. In 1854 Parliament enacted a measure for the purpose of putting an end to discrimination. The second section of the act required railway companies to afford all reasonable facilities for receiving, forwarding and delivering both through and local traffic and prohibited them from giving any "undue or unreasonable preference or advantage to or in favor of any particular person or company, or any particular description of traffic, in any respect whatsoever." The law contained no provision as to the determination of reasonable rates, the implication being that the charter maxima afforded a sufficient standard of reasonableness. The enforcement of the act was committed to the Court of Common Pleas at Westminster, the Superior Court in Dublin and the Court of Session in Scotland. Anybody complaining of a violation of the law could bring action for its enforcement, and the Board of Trade were also authorized to have proceedings brought for the enforcement of the act by certifying violations to the Attorney General in England or Ireland or to the Lord Advocate in Scotland. The courts could issue a writ of injunction restraining a railway company from a contravention of the law, and, should the order be disobeyed, could levy a fine not to exceed £200 a day for every day the company refused to observe the order. No provision was made for an award of damages to a shipper against whom discrimination had been practiced.

This law, though it marked a great advance over former measures, had but little practical effect. The courts showed little desire to consider anything beyond the legal points of a complaint and inasmuch as the question of discrimination was an economic rather than a strictly legal issue, the shippers were able to get but little relief from court proceedings. Moreover, the process of securing redress from the courts was usually so slow and expensive that complainants became discouraged. The law embodied an excellent principle and marked a new departure in railway regulation, but because of the lack of machinery for proper enforcement, it was of little practical value to the public.

Finding that the people were not appealing to the courts for enforcement of the Act of 1854, and also observing that the discriminating practices of the railway companies continued to grow, Parliament in 1873 passed a law intended to supply more effective machinery for rate regulation. A board of three railway commissioners was created, it being stipulated that one of the members should be a lawyer and another should be a man of practical experience in the railway business. The jurisdiction of all cases arising from complaints made under the second section of the Act of 1854 was transferred to the commissioners, and they were also assigned certain other powers and duties, including powers to fix "terminal charges" in case of any dispute which might arise concerning such charges, and to require railway companies to keep at each station schedules of charges which should be open to public inspection. The orders of the commissioners were not binding but were to be enforced by the superior courts. Appeals on questions of law could be taken from the decisions of the commissioners to the superior courts. The act establishing the new tribunal was to continue in force for a period of five years, but it was later renewed and extended until 1888.

The success of the new system of regulation was but slight. The commissioners could make findings and issue orders, but could not secure compliance without resorting to action in the courts. The tribunal had neither the power nor the dignity of a court, and the railway companies gave it scant measure of respect. They did not attempt to present an adequate defense against complaints brought before the commissioners, preferring to wait until the case reached the law courts. Here they not only presented new facts for their defense but often successfully challenged the jurisdiction of the commissioners. Indeed the effect of the act of 1873 seems to have been that the process of securing redress for violations of the second section of the Act of 1854 became even longer, more wearisome, and more expensive than it had been before, and as a result shippers ceased to bring actions before the new tribunal.

In 1881 and 1882 a Select Committee of the House of Commons made an elaborate and detailed investigation of railway rates and charges and the existing methods of their regulation. The committee summed up the complaints concerning the railways as follows:

1. That rates in excess of the maximum authorized by the special acts are in many cases exacted.

2. That on some lines of railway higher rates are charged on some kinds of goods as compared with others, although the cost to the company of performing the service is no greater in one case than in the other.

3. That in many cases lower rates are charged for goods imported or for export than for the same articles produced or for consumption in this country.

4. That preferential rates are granted to one port or town as against another.

5. That rates are now, in certain instances, much higher than they were many years ago, and that excessive, although not illegal, rates prevent the development of traffic

to the prejudice of the public and of the railways themselves.

6. That the difficulties in the way of obtaining redress by private individuals against railway companies for overcharge or illegal preference are almost insuperable.

7. That in consequence of the multiplicity of private acts, imperfect classifications, and defective rate books, it is almost impracticable to ascertain the particular class to which an article belongs, and the rates which the railway company will charge or is authorized to charge for its conveyance.

The committee made an exhaustive inquiry into all these complaints and found that most of them rested on a basis of fact. In particular did the existing scheme of classification and rates appear confusing, it being necessary in some cases to consult more than fifty separate acts to determine the various rates a company was authorized to charge. The passenger service the committee found was on the whole satisfactory, though on some lines there seemed to be an insufficient provision for carrying third-class passengers. Among its recommendations the committee suggested that a uniform classification of goods be adopted for the entire railway system, and that the Board of Railway Commissioners be made a permanent court of record and its powers be extended.

The first result of the work of this committee was the passage of the Cheap Trains Act of 1883 which authorized the Board of Trade to order the railways to give more frequent cheap passenger service to workmen. In 1888 a new Railway and Canal Traffic Act was passed, providing for a complete revision of the entire system of railway freight rates and for the creation of adequate machinery for railway regulation. By this Act the Board of Railway Commissioners created by the Act of 1873 was superseded by a permanent Railway and Canal Commission.

This commission, which is still in existence, has five members, two appointed by the Crown on the recommendation of the president of the Board of Trade, and three *ex-officio* members, one for England, one for Scotland and one for Ireland. Of the two appointed members one must be a man of practical experience in railway transportation. The *ex-officio* member in each case is such judge of the Superior Court as in England may be designated by the Lord Chancellor of England, in Scotland by the Lord President of the Court of Sessions and in Ireland by the Lord Chancellor of Ireland. When the commission is at work it is composed of three commissioners, the two appointed members and the *ex-officio* member of England, Ireland or Scotland, according to the country in which the commission is sitting. In event of the inability of any member to attend a meeting of the commission, a temporary substitute may be named by the authority that names the regular members. The *ex-officio* member presides over the meetings of the commission and his opinion prevails on all questions of law arising in any case. The commission is a court of record and no appeal from its decisions is permitted upon any question of fact or upon the *locus standi* of a complainant. Its orders are binding unless set aside by a superior court of appeal.

The commission was assigned by the Act of 1888 all the duties previously exercised by the Railway Commissioners and it was also vested with jurisdiction over all cases involving violation of special acts relating to facilities and charges. It was authorized to determine the legality of any rate, to order railway companies to provide reasonable facilities for handling traffic, to order through rates on the application of railroad companies or shippers, to determine the reasonableness of "group" rates, and to award damages to complainants. No damages were to be awarded, however, on a charge of undue preference, if the rates complained of had

been published in the rate books of the company and the complainant had not given written notice to the company that the rates in question were considered unduly discriminatory.

The act prohibited differential rates in favor of or against foreign merchandise, authorized the Railway Commission and the courts to direct "that no higher charge shall be made to any person for services in respect of merchandise carried over a less distance than is made to any other person for similar services in respect of the like description and quantity of merchandise carried over a greater distance on the same line of railway," and stipulated that whenever unequal charges for similar services should be shown to exist, the burden of proving that the lower charge was not an undue preference should fall upon the railway company.

A new feature of regulation contained in the Act of 1888, copied from the Massachusetts Railroad Commission law of that time, was embodied in a section authorizing the Board of Trade to act as a committee of conciliation in cases where persons were of the opinion that they were being charged unreasonable or unfair rates by the railway companies. If upon receiving an objection to a rate the Board of Trade felt there was reasonable ground for complaint they could call upon the railway company for an explanation "and endeavor to settle amicably the differences between the complainant and the railway company." The Board of Trade could, under this section, consider not only complaints concerning discriminatory rates and rates which were thought to be in excess of the legal maximum, but also complaints concerning rates which, though they might be unreasonable, were not technical violations of the law.

In addition to establishing adequate and effective means for enforcing the law against discrimination the Act of 1888 paved the way for a comprehensive readjustment of the entire system of freight rates on British railways. All

the railway companies were directed to work out, in collaboration with the Board of Trade, a revised classification of merchandise traffic and revised schedules of maximum rates. It was stipulated that public hearings should be held on all proposed changes, and that when the new classification and schedules were finally completed they should be enacted into law. After numerous hearings and investigations by the Board of Trade and by a joint parliamentary committee the schedules were completed. Bills for their confirmation were passed in 1891 and 1892, and their effective date set for January 1, 1893.

The new laws provided for a great change in classifications and rates. A new and uniform classification was introduced for the entire United Kingdom; maximum rates were greatly modified and fixed on a new basis; maximum charges for terminal services were established; and the railway companies were required to afford facilities for carrying perishable goods such as fish, fruit, dairy products and hothouse vegetables, either by passenger train or by similar service. The railway companies were empowered to make reasonable charges for such services as collection and delivery of traffic, weighing, supplying siding facilities, etc., and were authorized to make payments for the use of shippers' cars.

Many of the new rates put into effect by the laws of 1891-1892 were substantial reductions under the rates previously charged, and to offset the losses occasioned by the reductions, the railway companies raised to the authorized maximum virtually all rates previously in force which had been below the new maxima. A storm of complaint immediately arose from shippers, and to meet the situation the Railway and Canal Traffic Act of 1894 was passed, which provided that if a railway company had increased or should increase directly or indirectly any rate or charge after December 31, 1892, and a complaint was made that

the increased rate was unreasonable, "it shall lie within the company to prove that the increase is reasonable, and for that purpose it is not sufficient to show that the rate or charge is within the limit fixed by an Act of Parliament." The Railway and Canal Commission was authorized to hear and determine any complaint with respect to any such increase, but not until after the complaint had been laid before the Board of Trade and an attempt made to secure an "amicable" settlement of the issue under the terms of the conciliation clause of the Act of 1888.

The law of 1894 virtually constituted as standards of reasonableness all rates in effect on December 31, 1892, except such rates as were reduced by the rate laws of 1891 and 1892, and gave to the Railway Commission broader discretionary powers with respect to rates than it had previously possessed. In 1913, because of a previous general increase in the wages of railway employees, an act was passed which provided that if a complaint of an increase of rates was made under the Act of 1894, the Railway Commission should permit the increase if the railway company could show that there had been a rise in operating expenses due to improving the condition of its clerical and labor force, that the proposed increase in rates was not greater than actually required for meeting the increased expense, and that the proportion of the increase allocated to the particular traffic about which the complaint was made was not unreasonable.

When Great Britain entered the war against Germany in August, 1914, the British railways automatically passed under the control of the Government by virtue of an act passed in 1871. The railway companies continued to operate their respective lines, but they were subject to the direction of a Railway Executive Committee, of which the nominal head was the President of the Board of Trade. The primary consideration in the railway policy of the

Government was to secure the expeditious movement of troops and supplies destined for military operations in France and elsewhere, and the movement of raw materials, supplies and equipment used in conducting British war industries. All the railway facilities were pooled into one great unified system, the solicitation of traffic was discontinued, many varieties of non-essential service were dispensed with, and every effort was made to keep ordinary commercial traffic, both freight and passenger, at a minimum. The results of unified operation, from a military standpoint, were highly gratifying. The early British expeditionary forces were taken to Southampton and despatched to the continent in an amazingly short time, and throughout the conflict the railways functioned in a highly admirable manner.

The law of 1871 provided that the railway companies should be adequately compensated for the use of their property if at any time the Government should assume control of the railroads, but it did not state precisely how the rate of compensation should be determined. Shortly after the war began the Government entered into definite arrangements with the various railroad corporations. These agreements provided that the companies should operate the railroads on behalf of the Government, making no charge for the transportation of Government traffic. The Government guaranteed to the companies a net income equal to that received by them in 1913. It was subsequently agreed that the Government should reimburse the companies for deferred maintenance charges, to an amount equal to the difference between what the companies expended and what they would have paid out under normal conditions. It was also agreed that at the end of Government control the companies should receive their property with revenue earning capacity unimpaired.

The increasing cost of living in Great Britain made it

necessary to increase the wages of the railway workers. In 1915 all employees were given a small weekly bonus, the cost of which was borne partly by the railroad companies and partly by the Government. A second bonus was granted in 1916 and a third in April, 1917.

Up to 1917 it was unnecessary for the Government to subsidize the railway companies. The roads earned their guaranteed income without any increase in rates or fares. Taking into consideration the fact that all Government traffic was carried free, the Government was obtaining a handsome income from the railroads. The costs of labor and supplies increased so rapidly, however, that early in 1917 the Government ordered an increase of 50 per cent in all passenger fares. This increase failed to make up for the added costs of operation, and by 1919 the railroads were showing a large operating deficit, which the Government was required to make good.

Upon the termination of hostilities in November, 1918, the British Government was confronted with the problem of restoring the railroads to their owners. At one time it was announced that the railroads would be nationalized, but this plan was later abandoned and steps taken to provide for the resumption of private management. The first step in this direction was the enactment of the Ministry of Transport Act in August, 1919.

This law provided for the appointment of a Minister of Transport to whom was entrusted virtually all the powers which the Board of Trade and other executive departments had exercised with respect to the railroads, tramways and other facilities for inland rail and water transportation. It was proposed that this Minister should assume charge of the railroad affairs of the Government for a period of two years, during which he should work out a railway policy for the future. He was given authority to establish rates, make agreements with regard to wages and working

conditions of railway employees, and to exercise general supervision over the railroads controlled by the Government. The law created an Advisory Committee on Rates, consisting of representatives of railroad, commercial and labor interests. The Minister of Transport was directed to consult with and obtain the advice of this Committee before making any revision in the rates, fares and other charges of the railroads. It was provided that any rates which the Minister of Transport might establish should be considered "reasonable" and notwithstanding the maximum rate laws of former years might be charged during the period of Government control and for 18 months thereafter, or until new maximum charges should be established by Parliament. The law did not, however, permit the exaction of discriminatory rates, it being expressly stipulated that the Railway and Canal Commission should continue to exercise its duties of correcting discriminations in railroad rates and services.

Shortly after assuming office the Minister of Transport was confronted with a general railroad strike. It was necessary to raise wages again to enable the workers to meet the high cost of living. The higher labor costs were reflected in an enlarged operating deficit of the railroads. In January, 1920, the freight rates on British railroads were increased 50 per cent. The increased receipts were not sufficient to offset the greater expenses, and in August passenger fares were increased 16⅔ per cent and freight rates 48 per cent, bringing fares to a level of 75 per cent higher than before the war and freight rates 112 per cent higher.

Despite these large increases in rates and fares the railroads failed to earn a net income equal to that of 1913. The high costs of operation were partly responsible for the failure of the carriers to obtain an adequate return, though an important contributing cause was a business depression which began in Great Britain in 1920 at about

the same time that the business reaction began in America. Traffic declined in volume, and the gross income of the railroads receded, notwithstanding the higher rates and fares.

In accordance with the law of 1919, the Minister of Transport worked out a program of railroad legislation. This program was enacted into law by Parliament, and on August 15, 1921, the British railways were returned to their owners. The Railways Act of 1921, when finally carried out, will revolutionize the conditions of railway transportation in England and Scotland. First of all the law directs that all the leading railroads of Great Britain and nearly all the smaller lines be consolidated into four large systems, each system having a monopoly within a particular region. The railroad companies are required to prepare the detailed plans of consolidation, but the plans must be approved, before final action, by an "Amalgamation Tribunal" which the law creates. There will also be a radical change in the system of railroad rates. The Act creates a "Rates Tribunal," consisting of representatives of shippers, railroad companies and labor, which is directed to devise a new freight classification, and in coöperation with the railroad companies establish scales of "standard charges," such as will permit the carriers to earn a net income equivalent to the net income of 1913, with a five percent allowance on subsequent capital expenditures. The Rates Tribunal has power to make changes in the standard charges, and to permit the establishment of "exceptional rates" lower than the standard charges. The rate structure will thus be much more flexible than under the old plan of regulation. The Railway and Canal Commission retains its jurisdiction over cases involving discrimination. A system of councils and arbitration boards is established to deal with labor disputes. It is expected that the entire work of reorganization will be completed by July 1, 1923.

In contrast with the policy of private ownership of rail-

roads as exemplified by the United Kingdom is the plan of government ownership as typified by the states of Germany. Though there are several countries in which the railroads are owned by the state, Germany furnishes the most prominent and successful example of government ownership and operation. Before the World War each state of the empire owned most of the railroads within its borders. The Imperial Government was also a railroad owner, having acquired the lines in Alsace-Lorraine shortly after that section was taken from France in 1871. However, the lines owned by the empire were operated by Prussia.

At the time of the introduction of the steam railroad the region of Europe now included in Germany was in a very backward state of industrial and commercial development, and the German people, divided into numerous states among which there was virtually no bond of union, were living under political conditions which discouraged private investment. These facts go far to explain the difference between the railway policy of Germany and that of the United Kingdom, where, at the time steam railway transportation began, substantial industrial development had taken place and political conditions were more settled. Had the industries of Germany been as fully developed as those of England in 1830, and had the political unification of the country been accomplished, it cannot be doubted that sufficient private capital would have been available to supply the country with needed railroads and it would not have been necessary for the governments of various states either to build roads or to aid private investors in undertaking the task. Moreover, it is unlikely that any state would have had military reasons for engaging in railway construction or for purchasing lines built by private capital.

Previous to the establishment of the German Empire in 1871, governmental control and regulation of German rail-

ways was exercised solely by the various state governments. Though the Imperial Government received in 1871 certain rights with respect to the direction of the railway policy, it did not (before the war of 1914) exercise its authority to any great extent, and the important factor in government control of the railroads remained, as before 1871, the policies followed by the various states. The policy of Prussia, the largest and strongest state, was typical, and the history of railway development in that kingdom was, on the whole, closely paralleled in the other parts of the empire.

In general the early railway policy of the Prussian Government was to aid private enterprise in the building of roads and to subject the roads thus constructed to detailed regulation. This practice was soon supplemented by a policy of state construction and operation of lines in various portions of the kingdom. The next step was the gradual acquisition of privately owned lines by the Government, a movement which eventually led to a nearly complete nationalization of the railway system of Prussia.

The first general Prussian law regulating railway affairs, enacted in 1838, was a detailed and comprehensive measure providing for the thorough control of the railroads by the state. Among the minor provisions of the law was one stipulating that the companies building railroads in Prussia were to be guaranteed for 30 years against the construction of competing lines. This guarantee of protection against competition did not, however, prove a sufficient inducement to private capital, and in 1842 a law was passed providing for state aid in the form of interest guaranties, the state assuring to those investing capital in railways a minimum rate of return on their investments. In guaranteeing the interest return on invested capital, the Government reserved the right of taking the roads under its own management, should the private companies prove to be unable so to manage their lines as to secure net earnings large enough

to pay the minimum interest guaranteed by the state. The encouragement offered by the Government was sufficient to stimulate private investment, and between 1843 and 1847 a large number of new railway lines were started. During the business depression following 1848 several of these new companies were unable to earn enough to meet interest payments and their lines were taken over and managed by the Government. The history of railway legislation in other countries as well as in Prussia shows that state subsidies and interest guaranties have had not a little to do in bringing about the nationalization of railroads.

The decade following 1850 was a period of active railway construction in Prussia, a large number of new lines being built by private capital and several lines by the state. The government lines constructed during this period were built chiefly for purposes of military strategy. Under the influence of Bismarck a political program was being mapped out for Prussia, the two cardinal features of which were the deposition of Austria from the place of dominating influence in German politics and the unification of the German states into a compact empire in which the Kingdom of Prussia was to be the most powerful factor. Such a program could be accomplished only by force of arms, and the efforts of Bismarck and the other statesmen who wrought so successfully for the unification of Germany were directed toward strengthening the military power of the German states, and of Prussia in particular. These statesmen saw that the railway system of Prussia and the other German states might be made to assist greatly in the military aims they had in view, and as a result the railway policy of Prussia for more than 20 years was dictated largely by the military purposes of Bismarck and his supporters.

As early as 1848 Prussia began the construction of a railroad leading from Berlin to the Russian frontier, and during the next two decades the Government added to its

railway net such lines as the state's limited resources made it possible to secure. Some lines were built, and from time to time the stocks of private railroad companies were purchased by the state. From 1862 to 1870 Bismarck gave less attention than he had given during the preceding decade to the development of the state railway system. The brief war with Austria in 1866, by which the first part of his political program was accomplished, and the preparation for the struggle with France, which was to pave the way for the formation of the German Empire, engrossed all his energies and attention. There was no pronounced change in his railway policy however; the lines already acquired by the state were retained and managed in much the same way as the private corporations managed their lines. Though acquired primarily for military purposes the roads were operated with a view to securing as favorable fiscal results as possible. Not only did Bismarck use the state roads as a source of revenue, but occasionally when he found it impossible to secure appropriations from the Prussian Diet sufficient for his military program he resorted to the sale of favorable railway concessions to private corporations as a means of obtaining money with which his plans could be carried out.

After the close of the Franco-Prussian War in 1871 and the formation of the German Empire, Bismarck endeavored to bring about the purchase by the empire of all the railroads within its borders, including those belonging to the states and those owned by private companies. He desired to strengthen the newly founded Imperial Government, and, by making it much stronger than any of the state governments, insure the permanency of German political unity. This, however, was not the reason advanced for the control of railways by imperial authority. The military advantage of such control, the elimination of rate discriminations, and the ability of the empire to use the railways for the promo-

tion of the industrial and social welfare of the German people were the arguments upon which chief stress was laid. The beginnings of an imperial system were made in the acquisition of the railways of Alsace-Lorraine by the empire, but the plan went no farther because of the jealousies of the states which were smaller and less powerful than Prussia.

The constitution of the new empire, adopted in 1871, provided, however, that the Imperial Government should have certain rights of control and legislation over the railways. It could build railways in any state, establish regulations for the purpose of securing uniformity of operation, regulate rates, require rates on provisions to be reduced in times of famine, and use all railways for military purposes. In practice the Imperial Government, previous to the beginning of the war in 1914, exercised but little of its power over railroads. An Imperial Railway Office (Reichs-Eisenbahnamt) was established at Berlin, but it possessed but little administrative control, because of the lack of requisite legislation. When the war commenced the railways of the empire were placed under the control of the central government. Albert Ballin, the Director General of the Hamburg-American Packet Company, being chosen to direct the management of the system. In 1917 the German Emperor issued a proclamation placing all German railways directly under the control of the military organization of the Empire.

Though unable to bring about the establishment of an imperial railway system Bismarck succeeded in 1878-1879 in inducing the Prussian Diet to embark upon a scheme of acquisition of private railway lines by the Government, it being planned to buy up not only the lines lying within the limits of Prussia but also several roads lying outside the kingdom, especially the leading private lines in north Germany. The Government did not at once take possession

of all the lines, but purchased one system after another as satisfactory arrangements could be made with the corporations. But little difficulty was encountered in securing possession of the private lines. By offering the companies a liberal sum for their properties and by exchanging Government bonds for the securities of the companies, the state was able to purchase the lines without serious opposition on the part of their former owners. In no case was it necessary to resort to expropriation.

When the policy of state purchase was inaugurated in Prussia, the Government owned more miles of road than any single corporation within the state. In April, 1880, the state possessed 3,760 miles of road. During the next few years the state purchases were made with considerable rapidity, so that in April, 1886, the Government was managing 13,000 miles of lines. In 1914 the Government system included 24,854 miles of line, of which 22,146 miles were within the kingdom of Prussia. Of the lines in the other states of the empire which were operated by the Prussian Government the most important were in Hesse, Brunswick, Saxe-Weimar, Saxe-Meiningen, Saxe-Coburg-Gotha and Anhalt. The entire state railway net of Hesse was in 1896-97 incorporated with that of Prussia; the lines in the other States represented purchases made from time to time by the Prussian Government, for the purpose of unifying and consolidating its railway system.

Not all railroads in Prussia were owned and operated by the Government. In 1913 there were about 1,800 miles of line in the hands of private corporations. These private roads consisted of relatively unimportant lines and were operated by their owners in accordance with detailed regulations laid down by the state. They were in no sense competitors with the state system.

The management of the Prussian railways offered a good example of the traditional skill of the Germans for organ-

ization. At the head of the Prussian system was the Minister of Public Works, appointed by the king. The railway department of the ministry (Eisenbahnabteilung) was under the supervision of an under-secretary, who was assisted by several "ministerial directors" (Ministerialdirektoren), councilors (Räte), and assistants. The staff of this department exercised general administrative powers over the whole railway system. It was divided into four sections, dealing respectively with management, construction, traffic and finance. These staff officials had but little to do with the operation of the railroads, confining their activities to determining the general policy to be followed in the management and extension of the railway system.

The actual operation of the railways, the business of fixing rates and fares, and of developing traffic, was intrusted to twenty-one Royal Railway Directories (Königliche Eisenbahndirektionen), each having charge of the railways in a particular section of the country. Each directory, consisting of several administrative officials, was headed by a president, whose position was roughly analogous to that of a president of a railway system in the United States, the chief difference being that the president of the directory had a closer relation to the actual details of railway administration and operation and had less to do with questions relating to finance and other matters of general railway policy. The president of the directory not only managed the state railways but was also the official representative of the Government for the regulation of the private railways within his district.

The operating force of a directory was organized on the departmental plan, with four main divisions of the work: operation (Betrieb), traffic (Verkehr), technical matters (Maschinen), and shops (Werkstätten). The work in each of these branches was subdivided territorially, a single "office" (Amt) consisting of a superintendent or manager

and his subordinates having charge of a particular branch of the work on an assigned portion of track, corresponding roughly to a "division" in this country. Because the work of operating the trains was the heaviest service there were more operating "offices" and divisions than traffic or other "offices" and divisions. For instance, in 1913 there were on all the state lines of Prussia 279 operating "offices" (Betriebsämter) each having an average of about 150 kilometers of track, 101 technical "offices" (Maschinenämter), 125 shops "offices" (Werkstättenämter), and only 93 traffic "offices" (Verkehrsämter).

The duty of making rates on the Prussian railways was performed by the railway directories, under the control and direction of the Department of Public Works. Closely associated with the rate making officials, and provided for by law, were certain Advisory Councils, which represented the shipping interests of the country. There were ten of these advisory bodies, nine Circuit Councils, which consulted with the officers of the directories, and a National Council, which advised the officers of the Department of Public Works. The councils established close relations between the shipping interests of the country and the railway officers, and endeavored to counteract the tendency toward inelasticity of rates which is likely to be present when railroads are owned and managed by the Government. They tried to prevent arbitrary action by the railway managers and secured the consideration of the economic interests of the entire country in all questions affecting the general rate policy.

In addition to the administrative and advisory bodies which exercised control over the Prussian railway system only, there were other bodies which had an important part in determining regulations respecting rates and services of the German railways. A voluntary advisory organization, the Conference of German Railways, composed of mem-

bers representing all the German states, considered questions relating to traffic which passed from one state to another within the empire. The Society of German Railway Managements made arrangements with regard to international railway traffic of Germany and the adjacent countries, including Austria-Hungary, Holland, Belgium, Roumania and Russian Poland. The latter organization was concerned chiefly with questions of uniformity of equipment, customs regulations, and shipping documents.

The history of railway development in the other states of the German Empire was similar to that in Prussia. Early lines were either constructed by the government or built by private capitalists who received from the state a guaranty of the interest on their investment. When Bismarck suggested his plan of the purchase of all railways by the Imperial Government, many of the smaller states, afraid that such a course would be carried out with respect to privately owned railroads, made haste to secure possession of the railways within their borders, and the later action of the Prussian Government in purchasing lines not only within the boundaries of Prussia but also without the kingdom furnished an additional incentive to railway nationalization in the smaller states. The result was that virtually all of the private railways in the German states passed under the control of the various state governments. The systems of administration of railways in the smaller states were copied to a large extent from the system employed by the Prussian Government.

The results of the nationalization of railways in Prussia were in the main satisfactory. From a financial standpoint in particular, government operation proved highly successful. According to a law passed in 1882, the first charge on the net receipts of the state railways was the payment of the interest on the debt incurred in the purchase of the roads. The railway management was also required to pay

off at least three-fourths of one per cent of the total debt each year, provided, of course, the net profits were large enough to enable such payments to be made.

The state succeeded in getting net receipts ranging from 5 to 7.5 per cent of the capital investment, from the operation of the railroads. During the period from 1882 to 1900 the operating ratio reached 64 per cent only once and in the majority of the years it was less than 60 per cent. From 1900 to 1914 expenses arose somewhat in proportion to receipts and the operating ratio averaged about 65 per cent annually, exceeding 70 per cent in only one year (1908), when business was unusually dull. From 1882 to 1900 the average annual net operating income amounted to 6.4 per cent of the capital invested in the railways, and from 1900 to 1914 was 6.6 per cent. The year of greatest profits was 1905, when the return was 7.52 per cent; in 1908 it was only 5.22 per cent, the lowest it had fallen since 1891. From these net earnings the state paid interest and redemption charges on the railway debt amounting to $2,000,000,000, expended out of earnings $500,000,000 for improvements and extensions, and turned into the general revenues about $1,000,000,000 to meet the ordinary expenses of the other departments of the Government. In part the financial success of the Prussian railways was due to economical management but in part also to the favorable topographical conditions which tended to keep down costs of construction and operation. In the states of southern Germany, where the land is more rugged in character, the financial returns on the government owned railroads were much less favorable.

While state ownership in Prussia was successful from a financial standpoint it cannot be said that the railways were developed to serve the economic interests of the country to the extent that they have been in most countries where private management has prevailed. The passenger

traffic was adequately provided for at rates which are lower than the rates in other countries in Western Europe and in the United States, but the freight service as regards both rates and facilities was inferior. The emphasis placed upon the development of facilities for passenger transportation was due in a large measure to the Prussian military policy. The rapid mobilization of troops in August, 1914, showed how effectively the Prussian Government had planned its railway system to meet the contingencies of a European war.

Throughout the war the German railways, all under the control of the imperial government, were administered strictly with reference to military activities. During the first three years of the war freight rates were increased but little and in fact some rates were reduced to facilitate the operation of certain industries and to keep down the price of food. On the other hand, passenger fares were advanced sharply almost as soon as hostilities began, to discourage travel and thereby release equipment for military transport service. By 1917 the inflation of the currency and the rise of wages and prices made it necessary to advance all railroad charges. One increase followed another, both before and after the extinction of the empire, until in 1920, freight rates were 600 per cent higher and passenger fares 670 per cent higher than they were in 1914

The crushing defeat of Germany in 1918 brought about a complete reorganization of the government, the empire being succeeded by a republican form of government. One of the most interesting developments of the economic reorganization of Germany has been that the railroads, instead of reverting to the individual states, have been combined into a single national system. The German Constitution, adopted by the National Assembly at Weimar in July, 1919, provided that the national government should, not later than April 1, 1920, take over all state railroads serving

general transportation needs and eventually such privately owned railways as the Government might deem it advisable to acquire. State-owned street railways and steam railroads of minor importance were to be left in possession of the states. All railroads not taken over by the Federal Government were to be managed and operated in conformity with rules and principles which the Government should prescribe. The constitution stipulated that the railways should be administered as an independent economic undertaking, which should pay its own expenses, including interest, and set aside a sinking fund to extinguish the debt incurred in the acquisition of the lines.

The state roads were duly nationalized April 1, 1920, and on May 4 an act was passed providing for the payment of the individual states for their railroads, and creating an organization to direct the operation of the national system. The law created a National Ministry of Transport, the head of which is a member of the President's cabinet. This minister was given general supervision of the railway service, with power to regulate the general policy of railroad transportation, direct the operation of the roads, control their finances and establish rates. The law provided that during the first year of control by the Federal Government the individual states should exercise a large measure of control over the railroads, each state organization acting as a branch of the National Ministry of Transport. The powers of the state organizations were to be gradually turned over to the National Ministry, which through its own official staff should eventually assume full control of the various lines. After this control has been fully established the Minister of Transport is to develop a permanent form of organization for the control of the unified system. The immediate operating organization of the railroads is patterned naturally after the organization which formerly prevailed in Prussia, the roads in different districts being

placed in charge of "directories" with a president in charge.

The coöperation of shipping interests with the railway management in the matter of fixing rates has been retained through the creation of a National Economic Council, one branch of which devotes its attention to railway problems, and through the appointment of a system of advisory councils, representing the leading industrial and commercial interests of Germany. These councils advise the Ministry of Transport on questions of rate policy. The German railway laborers are likewise represented on the Railway Branch of the National Economic Council, and have a right to be heard on all questions involving wages and working conditions.

The administrative system of the German railways has not yet reached final form, and probably will not until the political conditions of Europe more nearly approach a state of equilibrium. It seems fairly certain, however, that the principle of government ownership and operation will be retained, and that the German railways will be more closely united than they were during the days of the empire. It will be interesting to see if state ownership will be as successful under a republican form of government as it was under the military autocracy of Prussia.

The results which the Prussian Government achieved in the management of railroads had a marked influence upon the policy of other European countries. In all the countries of Europe except the United Kingdom the railroads have been partially or completely nationalized. Italy tried government ownership and operation of its leading railways from 1868 to 1885, and then abandoned government operation, leasing the lines to private corporations. This did not prove satisfactory and in 1905 the operation of the roads by the government was again resumed, and has since been continued.

In France the railroads were constructed chiefly at the

expense of the government. Seven railroad systems were created in that country by 1883, each of which had a monopoly in a certain region. Six of these were for many years operated by private corporations and one by the state. In 1907 one of the private systems was purchased by the government. The charters of the existing private companies will expire between 1950 and 1960, and if no alteration is made in the present program of the French government the state will in that decade come into possession of all the railroad systems. The French railroads, like nearly all other railroads of Europe, were controlled by the government during the World War, and it is not unlikely that complete nationalization will occur before the expiration of the charters of the private corporations.

In Belgium and in Holland about one-half of the railroads are operated by the state; in Switzerland virtually all the railroads have been owned and operated by the government since 1909; in the states which formerly composed the Austro-Hungarian Empire and in the Balkan states most of the railways have been nationalized. The leading lines of Russia have been built and operated by the government. In Sweden the privately owned railways have a greater mileage than those owned by the state, while in Norway only a small part of the railway net is privately owned.

In the British possessions of South Africa, Australasia and India privately owned railroads are few in number and of little importance. In Japan also the railways are virtually all owned and operated by the government. The Chinese government owns and operates several railroads, though the leading systems of China are controlled by foreign governments or by capitalists of foreign nations.

In America the United States is the only country which has consistently adhered to the policy of private ownership and operation of railways. In South America the mileage of privately owned railways is considerably greater than

that of state railways, but nearly all the South American governments have followed the practice of building and operating railway systems. In the Dominion of Canada the Intercolonial system, which was constructed by the government for political purposes, was for many years the only state railway, but the financial reverses suffered by the Canadian Northern and the Grand Trunk systems during the course of the war have resulted in the taking over of these lines by the Canadian government. The Canadian Pacific is now the only important privately owned and operated railroad in Canada.

The governmental control of railroads in different countries of the world has assumed a wide variety of forms. Social, political and economic conditions are not the same in all countries, and in the same country these conditions change from time to time. In some states, such as France and Germany, the individual expects the government to exercise many functions which the citizens of other countries do not want their governments to perform. The English political ideal, for example, has been to minimize the industrial functions of the government. This ideal has had a marked influence in the economic and political growth of the United States.

The political history of various nations has shaped the development of railway policy. In Italy and Germany the consolidation of railroads under state control was part of the general movement for political and economic unification. The fact that the United States is a federal state composed of a large number of States which have the power to charter and regulate railroads has unquestionably colored the railway policy of this country. In new countries one is likely to find that the government undertakes the construction of transportation facilities in order that the development of natural resources may proceed as rapidly as possible. The early railroads of the United States were

constructed largely at public expense. In Australia and New Zealand public funds have been used to hasten railroad development.

On the whole the present tendency, outside of the United States, is for the government to displace the private corporation in the ownership and management of transportation facilities as well as of other public utilities. While the change has been due in part to considerations of a financial and political character, it has come chiefly from the steady growth of the belief that society itself, through its political machinery, should perform all those functions which are of a purely public nature and cease delegating them to private agencies.

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CHAPTER XXIV

PUBLIC AID TO RAILROAD CONSTRUCTION IN THE UNITED STATES

Aid given by the States to railroads, 408. Forms of aid given by the States, 409. Amount of aid given by the States, 409. The results of state aid were unsatisfactory, 410. National aid to railroad construction, 411. Terms of the land grants, 412. The grants to the Pacific roads, 412. Repeal of the land grants, 415. The loan of public funds to aid railroads, 415. Concerning the policy of loans and land grants, 417. County, municipal, and individual aid to railroad building, 418. Local individual aid, 419. References, 420.

THE railroads in the United States have been built and managed mainly by private agencies. In the early days of railway history a small mileage of railway in Pennsylvania and in the middle West and South was built and operated by State authorities, but these lines were long ago sold or leased to private corporations. The Federal Government has never engaged directly in the construction of railways in the territory now comprising the States except for military purposes during the Civil War, though it operates a line of railway across the Isthmus of Panama, and is now undertaking the construction of a railway system in the Territory of Alaska. But while few railroads have been built by the governments in the United States, the private agencies which have constructed many of the great railway systems have received from the public a large amount of substantial aid. This aid has been given in many forms and by as many different agencies—by the National Government, by the States, by county and city governments, and by individuals.

Aid Given to Railroads by Individual States

The States began actively to construct railroads or to aid in building them in 1837, although a few of the States had given assistance previous to that date. State aid to railroad building was a part of the policy of government aid to works of internal improvement. The construction of canals and turnpikes, as has been noted in a previous chapter, had been assisted by the States after 1815. When the railroad had shown itself to be an efficient transportation agent, there at once arose a demand, which was especially strong in the States whose industrial development was least advanced, for a rapid construction of railways. The States responded to this popular demand not only because there was a demand for transportation facilities for the development of the resources of the country, but also because it was supposed that the Government could raise the funds for the construction of the railroads with very little effort. During the years which preceded and followed the panic of 1837 it was supposed by many of the States that banking institutions could create capital. The banks were regarded as institutions by means of which credit could be extended, and the faith of the people in the development of the resources of the country was such that they thought the credit created by the banks could, without difficulty, be made actual capital. At the time this fallacy was prevalent the national revenue from the sale of public lands was especially large, and the United States Government accumulated between 1830 and 1837 a considerable surplus, which it unwisely decided in 1837 to distribute among the States. This distribution of the surplus revenue by the National Government stimulated the establishment of unsound banking institutions, and caused the States to go further and faster with their policy of aiding railroads than they otherwise would have gone.

The assistance given by the States to railroad construction most often took the form of the purchase of the stocks of railway corporations. Sometimes bonds were purchased, and sometimes there was a donation of state funds, either as cash or state securities. The aid given by the State was regarded more as loans than as gifts, but, as a matter of fact, the investments or advances made by the States were only partly paid back. Several of the States engaged directly in the construction of railroads. Other commonwealths, particularly after 1850, made large grants of public lands to the railroad corporations, the lands thus granted having been received by the States from the National Government.

The amount of aid given by the States to railroads cannot be stated precisely, but the figures available indicate that the total donations were large. The entire debts of the States in 1841 exceeded $231,000,000. These debts had been contracted partly for the purpose of assisting banking institutions, which had received not less than $50,000,000, and partly for the construction of works of internal improvement.

Of the state funds used in promoting internal improvements, the amount paid out on canals and turnpikes much exceeded the amount expended on railroads. But the sum contributed by the States for railroads in the West, and more especially in the South, after 1841 was greater than the amount given before that date. The State of Missouri, for instance, which spent nearly $32,000,000 on railroad construction, of which sum only a little over $6,000,000 was ever again obtained by the State, granted very little aid before 1850. Tennessee incurred a debt of $29,234,000 by aiding railroads; of this sum over half was contracted after 1860. North Carolina had a similar experience. Of the New England States, Massachusetts was the only one that aided railroad building, her assistance amounting to

$6,044,000. There were 19 States in all which gave or advanced public funds for the construction of railroads, Illinois, Indiana, Michigan, Georgia, Tennessee, North and South Carolina, Missouri, Virginia, and Louisiana being those which contracted the largest debts for this purpose.

The aid given by the American States to railroad building accomplished small results. In most of the States concerned there was little appreciation of the necessity for adhering to conservative fiscal methods. Many of the enterprises aided by the States were of relatively small importance. The States granted their credit lavishly, with little concern for the method by which the securities issued were to be paid. In due time it was discovered that banks could not create capital, and that railroads could not immediately develop the resources of the sections through which they were built, and that the ability of the States to raise funds by taxation did not increase so rapidly as the debts of the States were enlarged. In nearly all cases the railroads constructed by the States were sold out to corporations for but a small fraction of what had been expended upon the roads. Several of the States, moreover, decided to repudiate the debts, and on the whole the connection of the States with banking institutions and with works of internal improvement constitutes a regrettable chapter in the history of American finance. The funds expended, however, were by no means altogether wasted. Railroads were constructed earlier and more rapidly than they could have been built by private capital, and the resources in many parts of the country became available sooner than would otherwise have been the case. The corporations which acquired the roads obtained the larger share of the benefits, but the general public was assisted to some extent by the lavishness of the States in aid of railroad building.

National Aid to Railroad Construction

The National Government began assisting railroad construction later than the States, but it has contributed even more than they have given. Most of the aid given by Congress to the railroads has consisted of grants of land from the public domain, although a few companies received large loans from the Federal treasury. The first extensive grant of land to further railroad building was made in 1850, when Congress gave to Illinois, Alabama, and Mississippi about 4,000,000 acres of land to be used by those States in aiding the construction of the Illinois Central and the Mobile and Ohio lines, by which Chicago was to be connected with New Orleans and Mobile. During the next 20 years about 80 such grants were made to the States in the Mississippi Valley.

In aiding the construction of roads built within the boundaries of the States, Congress for some years did not donate land directly to corporations, but gave the land to States as trustees, which were to turn the land over to the railway companies. The tendency in the fifties was to interpret the Constitution more narrowly than it has been interpreted since the Civil War, and many persons questioned whether Congress had the power to donate land located within a State to a railroad corporation. When, in 1862 and later, the occasion arose for aiding companies to build lines through the Territories, Congress did not hesitate to make grants directly to the corporations; and after the Civil War grants were made to companies from lands within the States.

The first direct grants to corporations were made in 1862 to secure a road from the Missouri River to the Pacific Ocean. For a score of years Congress had been urged to aid in constructing a road to the Pacific, but action was delayed from time to time, mainly because of the rivalry

of the Southern and Northern States as to the route to be chosen. After the Southern States seceded Congress was able to act, and the Civil War greatly increased the need of rail connection between the western part of the country and the section east of the Rocky Mountains. Military and political as well as economic reasons then impelled Congress to act.

In making these grants to railroads the United States sought, among other purposes, to increase the accessibility and value of the public lands not given away. The grant to Illinois for the Illinois Central Railroad—the first large grant—was the model followed in all the subsequent donations; some companies received more land per mile of road than others did, but all the grants had the same general terms. According to the Illinois grant, the railroad company was given a right of way 200 feet wide through the public lands, and was also given alternate (the even numbered) sections of land on each side of the line for a distance of six miles from the road. The company thus secured half the land within a strip 12 miles wide, or six square miles of land, for each mile of track built. If any of the land within this 12-mile strip had previously been disposed of by the Government, the railroad might select an equal area within 15 miles of the railroad. The alternate (odd numbered) sections retained by the Government within the 12-mile strip were not to be sold for less than $2.50 an acre. In the grants made at a later date a wider strip of land was donated, and in some cases the Government did not agree to charge $2.50 or more an acre for the sections it retained within the land-grant strip.

The grants made from 1862 to 1871 to aid the building of roads from the Mississippi and Missouri Rivers to the Pacific Ocean were for several reasons larger than those previously made. The lands given away were less

valuable than those located within the States near the Mississippi River, while the cost and difficulties of building the roads over the Rocky Mountains were necessarily greater than they had been in the Mississippi Valley. Congress, moreover, had grown more liberal than it had been during the fifties. By the act of 1862, as amended in 1864, the Union, Kansas, and Central Pacific Companies, and the three other corporations which undertook to build the first tracks from the Missouri River to the Pacific Ocean, were given 10 square miles of land for each mile of line. The grant to the Union Pacific, the company which built the road from Omaha to Ogden, amounted to 12,000,000 acres. The grant to the Central Pacific Company, which constructed the track between Sacramento, Cal., and Ogden, was 8,000,000 acres. The company which later came to have the name of the Kansas Pacific Company was granted 6,000,000 acres, and the other companies concerned in building this first Pacific connection were to receive nearly 7,000,000 acres. Thus 33,000,000 acres, a gift of an area considerably larger than the State of Pennsylvania, was offered by Congress to induce corporations to build the first railroad across the Western plains and mountains. In addition to this gift these corporations received a large loan of funds from the United States.

The Atchison, Topeka and Santa Fé received a grant of 3,000,000 acres in 1863, and three years later the Atlantic and Pacific Railroad, which is now a part of the Atchison system, received a grant of 42,000,000 acres—a grant of enormous area but of relatively small value. Much of this grant reverted to the United States by forfeiture. In 1864 a grant of about as great area and of much greater value was made to the Northern Pacific. The roads now comprised in the Texas and Pacific received nearly 23,000,000 acres, and the Southern Pacific obtained 14,000,000 acres. The grants made to each of

the last four companies mentioned comprised 20 sections of land per mile of road in the States and 40 sections per mile in the Territories.

During the 10 years ending in 1871 Congress made grants to 23 companies. The grants made between 1850 and 1871 have placed at the disposal of the railway companies about 159,000,000 acres of the public domain—an area exceeding five States like Pennsylvania. The original grants made available for sale by the railroad companies a larger area than this, but parts of the grants reverted to the United States, and less than 159,000,000 acres will actually pass to the railroads, because in many instances the companies have not been able to comply with the conditions imposed in the grants. The companies were granted a certain number of sections of land per mile of line constructed, but could claim the land or receive a "patent" from the United States only after completing a designated mileage of track—20, 25, or 40 miles—i. e., as each stretch of track of designated length was completed the land corresponding to that mileage might be claimed. The companies have not received all the land to which their work of road construction entitles them. The United States now annually gives the companies patents to large amounts of land. Most of the companies failed to complete their lines within the time fixed by the grants, and some of the contemplated roads were never built. However, a failure to finish a road within the time set by law was held by the Supreme Court not to work a forfeiture of the grant without an act of Congress declaring the grants forfeited; indeed, only about half of the mileage to which the donations of land applied were completed within the legal time limit, and many companies were allowed to continue construction and to secure the land corresponding to the new mileage after the period set by law for securing the benefit of the grants had expired. The total amount of land secured by

the railroads from the Federal Government up to June 30, 1914, was 116,512,262 acres; and the companies are entitled under their grants to receive several million acres more. The General Land Office of the United States is unable to state just how many acres will be patented in adjusting all the grants. The original grants applied to about 15,000 miles of railroad.

During the seventies there developed a strong popular sentiment against the granting of public land to railroad corporations, and an agitation was started to influence Congress to declare all the land forfeited that had not been earned by the construction of lines within the time stipulated in the grants. Congress acted regarding a few grants during the eighties, and in 1890 passed a law providing for the forfeiture of all lands "opposite to and coterminous with the portions of any such railroad not now completed and in operation." The lands now being claimed by the companies are for mileage finished prior to the passage of that law. This agitation for the repeal of the land grants was due in part to the popular feeling against railroads that developed in connection with the effort to subject railroad corporations to public control; but the demand for the repeal of the land grants came mainly because of the conviction that the public domain should be disposed of only to settlers or "homesteaders," and in small tracts of 160 acres.

The companies which built the first Pacific road were aided by a loan of United States funds as well as by donations of public lands. By the act of 1862, as amended in 1864, the United States Government permitted the Union Pacific and Central Pacific and certain other smaller companies to sell United States thirty-year 6 per cent bonds to secure a part of the capital to be used in building the roads. As each section of 20 miles was completed the railroad companies received these bonds to the amount of

"$16,000 for each mile east of the eastern base of the Rocky Mountains and west of the western base of the Sierra Nevada, $48,000 for each of the 150 miles west of the eastern base of the Rocky Mountains and 150 miles east of the western base of the Sierra Nevada, and $32,000 for each mile intervening between the two mountain sections." As security for the repayment of the loan, the United States, by the act of 1864, took a second mortgage on the roads aided. The companies were allowed to sell their own bonds and to issue a first mortgage equal to the amount of the Government's second mortgage. The United States expected the companies to pay the interest and the principal of the Government loan by applying 5 per cent of their net earnings to that purpose, and by carrying the Government's mails, troops, and military supplies.

The Government bonds received by the Union Pacific Company amounted to $27,236,512, those obtained by the Central and Western Pacific Companies to $27,855,680, and those by the company later called the Kansas Pacific to $6,300,000. Two other companies received bonds to the value of $3,228,320, making the total sum originally advanced by the Government to the six companies $64,620,512. The incomes from the operation of these roads were much less than had been expected, and the net earnings were either non-existent or so small that the companies were unable to pay interest on the Government bonds they had received, and the debts of the roads to the United States rapidly grew larger. In 1878 Congress passed the Thurman Act providing for a sinking fund to be managed by the Government and requiring larger payments from the companies; but the debts to the United States continued to increase. The United States effected a settlement with the owners of the Union Pacific in 1897, and was fortunate in obtaining the full amount advanced as principal and interest, thus losing only the interest on the interest payments.

The settlement with the Kansas Pacific, which was made in 1898, was less advantageous; the United States secured the return of the principal of the bonds and about one-eighth of the amount paid as interest. The indebtedness of the Central Pacific Company, principal and accumulated interest, amounted to $58,812,715 at the beginning of 1899, at which time an arrangement was made whereby this sum was funded into 20 promissory notes bearing 3 per cent interest, one note being payable each six months for 10 years. For many years it seemed certain that the United States must lose the greater share of the large sum it had loaned to these companies, and such would have been the result had the Government not had the good fortune of bringing about a settlement at the beginning of a period of business prosperity. This experience of the Government in aiding private corporations was so unsatisfactory that Congress will probably not soon care to repeat the experiment.

In granting the public lands and loaning its bonds to corporations to further railroad construction, the National Government sought to accomplish several purposes: one was to secure better transportation facilities for the mails and troops of the Government; another object was to connect the Mississippi Valley with the States beyond the Rocky Mountains; another reason was the desire of the Government to promote the settlement of the country, and thus to increase the wealth and strength of the people of the United States. The Government, moreover, acted as a landlord with an immense tract of land having very little value. A part of this large tract of land was given away in order that the land retained might possess a greater value. The policy of giving away the public domain to corporations has been much criticized. Unquestionably the United States was more liberal than it need have been, and if the public had chosen to wait 20 years the railroads in the central West and between the Mississippi Valley and the

Pacific Ocean would have been constructed by private capital. The liberal donations of public land caused the railroads in that section of the country to be built earlier than they would otherwise have been constructed, the West was settled up more quickly, and the Government has been able to dispose of many parts of the domain it did not give away at an earlier date, and possibly more advantageously than they could have been sold had none of the land been given to the railroad corporations.

As we now view the matter in retrospect, it seems that Congress was too eager to dispose of the public lands. The existence of an unoccupied public domain upon which those may draw who are seeking homes and an independent position industrially and socially is an advantage to society which we are coming to appreciate more fully as the new lands available for settlement are rapidly decreasing in area, accessibility, and fertility. As the question appeared to Congress from 1850 to 1870, the necessity for greater transportation facilities than unaided private capital was disposed to provide seemed imperative. The United States had a vast unoccupied domain that would be of little value to the country until settled; and Congress decided to hasten the occupation of the West by aiding railroad companies. Had the policy of land grants been carried out in a more conservative manner, the results obtained might probably have been secured at less cost to the public.

County, Municipal, and Individual Aid to Railroad Building

The contributions made by municipalities and counties cannot be stated exactly, but enough figures are available to show that the total amount must have been large. According to the census of 1870, there were then outstanding $185,000,000 of county and municipal bonds which had been

issued to aid railroads. What additional amount of bonds had been paid off and canceled prior to 1870 is not known, but probably the sum was considerable. In the State of New York the county and municipal subscriptions amounted to about $30,000,000, and in Massachusetts the towns voted $2,350,000 toward railroad construction. In 1873 the Railroad and Warehouse Commission of Illinois addressed a circular letter to each of the county clerks in the State requesting them to report how much aid had been voted and issued by the counties and towns to railroads. Replies were received from 86 of the 102 counties of the State, and it was reported that in those 86 counties the bonds and money voted and issued equaled $16,087,027. This would indicate that nearly $20,000,000 of aid had been given to the railroads by the local governments in Illinois. Local aid to railroads was general in all parts of the United States, and in view of the fact that the counties and towns of Illinois and New York gave nearly $50,000,000, the total county and town aid given in the entire country probably amounted to several hundred million dollars.

These large sums were voted by the counties and towns in the new sections of the country because their material progress depended entirely upon their securing access to markets. People thought themselves justified in making large sacrifices to secure good transportation facilities at an earlier date than they could be obtained by depending on unaided private capital. Generally speaking, the thought was a correct one, but the corporations in some instances secured larger amounts than the public need have given to secure the railway desired. A favored method by which companies secured a large bonus was that of surveying two alternative routes—a route through each of two rival towns—for the purpose of getting the towns to bid against each other for the railroad.

The companies secured capital from individuals as well

as from the counties and municipalities. The farmers and merchants living along the line of a proposed road, particularly in the central West, were persuaded to purchase stock of the corporations proposing to build. In some cases the stocks thus purchased were good investments, but in other instances the companies were so financiered during the period of construction that bankruptcy and reorganization followed close after the completion of the road, and partially or wholly destroyed the value of the stocks held by the local purchasers. The persons who benefited by these reorganizations consisted largely of eastern capitalists, against whom the farmers, merchants, and business men in the towns of the central West came to feel very bitter. Moreover, having thus lost a large part of their investments, the local contributors felt that they were entitled to favorable rates, but they presently found that they were charged higher rates and fares than were the shippers living in the large cities where the carriers were subject to competition. This discrimination against the local shipper intensified the antagonism of the public to the management of the railways, and brought about the enactment of laws regulating rates and fares and the other relations of the railways to the public. The fact that the public had aided the companies to build their roads accentuated the demand for public regulation.

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CHAPTER XXV

REGULATION OF RAILROADS BY THE AMERICAN STATE GOVERNMENTS—THE STATE COMMISSIONS

Powers of the Federal and State governments over railroads, 422. Little regulation before 1870, 423. Charter limitations on rates and profits, 424. Early railroad commissions and their functions, 426. The demand for rate regulation, 427. The two types of railroad commissions, 427. The Massachusetts commission of 1869, 427. Railroad regulation in the West and South, 429. The granger laws and the Illinois commission, 430. Granger laws upheld by the Supreme Court, 432. The Wabash decision of 1886, 433. Modification of the early granger laws, 434. Recent methods of state regulation; the utilities commission, 435. The powers of present state commissions; the law of Illinois, 436. Railroad commissions and corporation commissions, 439. Objections to state regulation, 440. Changes effected by the Transportation Act of 1920, 443. References, 445.

In the United States as in the United Kingdom the Government has sought to supervise or regulate rather than to monopolize the business of rail transportation. By the Constitution the power "to regulate commerce with foreign nations, and among the several States and with the Indian tribes" is vested in Congress, while each State has authority over the commerce that does not pass its boundaries. The regulation of international and interstate commerce is vested in Congress; the control of *intra*state commerce is exercised by the several States. There are forty-nine governments in the continental United States possessing authority over railroads. The problem of railway regulation is unavoidably a large and complicated one in a coun-

try as extensive as ours, and the division of political authority resulting from our federal plan of government has made the problem a more complex one than it would be were there only one controlling authority, as is the case in the United Kingdom, France, Austria, and most other European countries.

The States preceded the Federal Government with legislation for the regulation of railways. The State alone could charter a corporation to construct and operate a railroad within its borders, and, as the corporation derived its powers from its charter, the States were in a position to exercise such control over the railroads as they chose to exert. The control which was actually exercised was slight—much less thorough in many particulars than the public welfare demanded. The tendency in this country has been to minimize government interference with railways as much as it has been thought possible to do without jeopardizing public interests, but the minimum of interference which has been considered safe has not always been the same.

During the period from 1840 to 1870 many States gave aid to railroad construction, and from 1850 to 1870 the National Government assisted the Western lines. The States also showed some tendency to regulate the railway companies, but government interference was rather for supervision than for regulation. From 1850 to 1870 there was but little effort made, outside of New England, even to supervise the railway business. This was the period of the dominance of the *laissez faire* or let-alone doctrine of government. The experience of the United States during this period, however, indicated that too much confidence had been placed in the efficiency of unrestrained interrailway competition as a regulator of the railway business; consequently since 1870 most of the States as well as Congress have endeavored to control the relations of the railroads to each other and to the public, and the present ten-

dency in the States is toward an increasingly stringent regulation.

In the beginning an effort was made to subject the railroads to the kind of regulation that had been exercised over the turnpike roads and canals. It was supposed that the railway was only an improved road, and that shippers and travelers would use their own vehicles for more or less of the traffic. The early charters, being modeled after the canal and turnpike charters that had preceded them, not only contained provisions regarding the organization of the corporation and the exercise of the State's power of eminent domain to secure a right of way, but also included sections regarding the erection of tollgates and the regulation of the tolls or charges which might be made. In many cases the charters fixed the maximum charges, and in other instances—especially in the New England States—the railway companies were permitted to fix their own charges, subject to periodic revision by the States in case the net earnings should exceed a stated per cent of the capital invested.

Charter and statute provisions regarding tollgates on railroads soon disappeared; but the policy of fixing maximum rates and fares for traffic by railroad was continued to some extent. However, the charter stipulations and other early legislative enactments fixing maximum rates or maximum profits exerted very little influence upon the actual charges of the railways, because the limits set were placed so high. The maximum rates fixed by the charters were considerably higher than the railroads actually charged. Furthermore, it was, and has always been, easy for a company to keep its net earnings from exceeding a fixed per cent of its capital as long as it has the power of increasing its capitalization by the issue of new stock.

Although the charter limitations on charges and profits proved ineffective, there was little disposition on the part of the State governments before 1870 to pass laws fixing

rates and fares. The public thought it might safely depend on interline competition for protection against exorbitant charges. Indeed, the railroads proved to be of such great assistance to the development of the country that the chief concern of the public, particularly in the Western States, was to secure as many lines as possible. There was little disposition to impose restrictions on a company proposing to build a new road. In many States general laws were passed under which railroad companies might be chartered without securing a special act of the legislature. The public did not think it necessary for the government to regulate the location, capitalization, construction and operation of the roads. Competition and "the laws of trade," it was thought, would attend to those matters. In this regard the United States acted differently from most European countries.

Though the State governments did not make any effort to regulate railway charges, beyond including ineffective maximum rates in charters, several of them did, in the period previous to the Civil War, exercise certain supervisory powers over the business of the railroad companies. These powers were usually exercised through a commission, the agency now almost universally employed for railway regulation, though the commissions of that time were quite different from the ones now existing. Briefly stated, the functions of the early commissions were the appraisement of the value of private property taken by the railroads, the apportionment of receipts and expenditures of interstate roads among the States concerned, the inspection of roads and the enforcement of laws to prevent accidents, the investigation of the affairs of railway corporations to determine whether they were violating their charters or the State laws, or whether they were giving the citizens or corporations of other States greater advantages than they were giving those of the State which had incorporated the compa-

nies, and the collection of statistical data concerning the financial affairs and business operations of the railroad corporations.

The first of the early railroad commissions were created in New England, where they were appointed for two purposes: (1) to appraise the value of the land which railroad companies might need to take from private persons with whom satisfactory terms of purchase could not be made; (2) to apportion the receipts and expenditures of an interstate road among the States in which the road conducted its business. The States considered this apportionment necessary, because they had placed in the railway charters limitations on the charges and profits of the companies. Some of the commissions established for these two purposes were given other duties of a supervisory character. To quote the Rhode Island law of 1839, the commissioners were to examine and report on "the state, condition, and proceedings of the several railroad companies, so far as the public interest may require the same." The commissioners were to inform the legislature regarding the financial affairs of the companies, and, as the New Hampshire law of 1844 provided, to report whether the companies were observing the provisions of their charters and of the laws of the State. Probably the strongest motive of the States in the early supervision of railroads was the desire to lessen the number of accidents. For this reason mainly a commission was established by Connecticut in 1853, by Vermont in 1855, and by Maine in 1858.

The attempts of the States to supervise railways, whether by commissions or by other executive officers of the government, suggested the need of systematic statistics regarding the financial and traffic operations of the companies. In several States—for example, Ohio, New York and New Jersey—the officers appointed to collect these statistics were forerunners of the railway commissions. They performed

one of the most important services for which commissions were subsequently created.

Shortly before 1870 there arose a strong public demand for a more effective regulation of railway transportation, especially for the regulation of railroad rates. The main cause of the demand was the growing prevalence of gross discriminations in rates and fares. Unrestrained competition led to such abuses that the people, both of the Eastern and Western States, passed more stringent laws to regulate the relations of the railways with each other and with the public. In the Eastern States, where the principal railway lines now in that section had already been constructed, and where the industries had been diversified and developed to a considerable degree, the laws enacted were more conservative than were the laws passed by the Western and Southern States. The Eastern States, in dealing with "the railway problem," depended on publicity and the force of public opinion to correct the abuses; they authorized their governments to supervise the railways first of all, and to regulate by force only when absolutely necessary. In the West and South, however, the feeling against the railroads was much more intense; the people did not believe publicity and public opinion would bring about satisfactory relations between the carriers and the public; they preferred rather to depend on publicity and penalties. The Eastern States established commissions, with power to investigate railway practices and to report the facts to the legislature and the people, and to suggest what laws should be passed. The Western and Southern States established commissions with power to issue orders and to enforce the orders by legal procedure. The eastern commissions could supervise and advise, the others could supervise and regulate; the former had advisory powers, the latter mandatory authority.

The Massachusetts commission, established in 1869, may

be taken as a type of the supervisory-advisory class. The commission consisted of three men appointed by the Governor with the consent of the Council. The term of office was three years, one person being appointed each year. The board had power:

1. To examine railway corporations and determine whether they were fulfilling the terms of their charters and obeying the laws.

2. To supervise the railroads "with reference to the security and accommodation of the public."

3. To investigate complaints against the railroads. It had the power to summon witnesses and examine them under oath. It could also institute investigations on its own motion.

4. To prescribe a uniform system of keeping railway accounts, and to inspect the books and accounts of railway corporations.

5. To act as a board of arbitration for the settlement of disputes between railroad corporations and the public.

6. To make an annual report to the legislature discussing "the actual working of the system of railroad transportation in its bearing upon the business and prosperity of the Commonwealth," and suggesting such legislation as might seem appropriate.

From this list of the chief powers possessed by the Massachusetts commission it will be seen that the enforcement of the decisions of the commission was left to public opinion. In the case of Massachusetts the commission enjoyed the confidence of the public, and was very successful in regulating the railways. When legislation was needed, the recommendations of the commission were usually accepted. Several commissions of this type were established in other States, but they have now all been replaced by mandatory or "strong" commissions. The commission of Massachu-

setts was one of the last of the advisory commissions to pass out of existence, it being superseded in 1913 by a body with mandatory authority.

The problem of railway regulation in the West differed much from the problem in the Eastern States. In the West the construction of railroads began later, and the public was concerned mainly with securing the needed lines. The public aid, State and local, though large in the East, was much greater in the West. There was little thought given to railway regulation in the West until after the Civil War; indeed, such was the confidence in the efficacy of competition to regulate the business of railway transportation that the necessity for State regulation was not realized.

Public opinion in the Western States underwent a very sudden and complete change during the five years succeeding 1867. The fierce competition of recently formed through lines connecting western cities with Chicago, and of the trunk lines joining Chicago with the Atlantic seaboard, led to personal discrimination and to a great reduction in through competitive rates. Rates at local non-competitive points being left unchanged or changed but slightly, the result was excessive discriminations between places. The farmers and people of the smaller towns, who had aided the railway corporations liberally in constructing the roads, were paying high rates, while the shippers in the large cities were favored with low rates. At the same time eastern capitalists were constructing new lines of railroads in the West with great rapidity. These railroad corporations, composed largely of non-resident men, seemed to be prospering greatly. Prices meanwhile were falling from the high level which they had been given by the inflation of the currency during the war. Falling prices for agricultural products, due to the contraction of the currency and to the great increase in the area devoted to farming,

were bringing down the farmer's profits and making him discontented.

The farmers and townsmen of the Western States saw no reason why the companies should not give local points as low rates as had been accorded to the large cities. They did not suppose the railroads were doing the competitive business merely for pleasure, or that the roads were carrying any traffic at a loss. The railroads must be making money on their competitive business, and ought to lower their local rates to the level of competitive charges. This reasoning was not altogether sound, and the people of the West did not fully understand the railway problem; but they knew that the railroads were unjustly discriminating, and they were convinced that local rates were disproportionately high. They believed also that the railroad corporations were public carriers, performing a service of a public nature, the charges for which could be regulated by public authority. The companies, however, at first ignored the public, and then defied them. The public accepted the gage of battle, the railroad companies were defeated, and the so-called "granger laws" and "granger decisions" were the result.

The laws which the Western States enacted between 1870 and 1880 for the regulation of railways, including the laws establishing State railroad commissions, are commonly called granger legislation, because of the support which the granger societies gave to the struggle to secure the legislation. The name is not altogether accurate, because the agitation for State control of railways in the West became strong before the Patrons of Husbandry or the grangers had been fully organized. In the beginning the agitation for State control was due to a farmers' movement to which the people of the towns gave their support. Later—that is, from 1872 on—the granger societies actively aided the movement, and became its

strongest supporter. Hence the name granger legislation.

The State regulation of railroads in the West was first undertaken by Illinois, and the Illinois commission may be taken as a type of the commission with power, the supervisory-mandatory railroad commission. In 1870 the people of Illinois revised their constitution, and included in the new document a clause enjoining upon the legislature the enactment of laws for the regulation of railways. To carry out this provision of the constitution, a law was approved April 7, 1871, prescribing maximum rates and fares, and prohibiting discriminations. Another act, approved a few days later, established a railroad and warehouse commission to supervise the railways and to assist in enforcing the laws for their regulation. The law approved April 7, 1871, was displaced in 1873 by a law making it the duty of the commission to prescribe "a schedule of reasonable maximum rates of charges for the transportation of passengers and freight."

The Illinois Railroad and Warehouse Commission, like the one for Massachusetts, had power to investigate the railroads as to their physical condition and management, and to prescribe the form of report to be made by the companies. In addition to possessing most of the powers held by the Massachusetts commission, the Illinois board could prescribe schedules of maximum charges, and could prosecute the railway companies either to compel them to obey the commission's decisions or to force them to obey the laws regulating railway transportation. Furthermore, if an Illinois company charged a rate higher than that which the commission declared reasonable, the company could be compelled to prove that the rate which it had charged was reasonable. The State was right until proved wrong; the burden of proof was thrown upon the carrier. This was an important modification of the common law,

which compelled the State to prove its case when it questioned the reasonableness of a rate charged by a common carrier.

Other States in the West and South passed laws similar to the Illinois statutes just described. In 1874 Iowa and Wisconsin passed laws prescribing maximum railway charges. The same year Minnesota established a commission endowed with power to fix rate schedules. In 1879 Georgia instituted a commission with power to prescribe rates. In 1879 California did what no other State had done by adopting a constitution in which the state legislature was required to establish a railroad commission with power to fix "rates of charges for the transportation of passengers and freight by railroad or other transportation companies."

The enforcement of the "granger laws" was vigorously opposed by the railroad companies, who maintained that their business was a private one, and that the State had no power to fix the rates which they should charge for their services. The railroads claimed, moreover, that the States which had granted a charter to a company giving it power to make reasonable charges for its services could not prescribe the rates to be charged by the company without the violation of a contract. It had been decided by the United States Supreme Court in 1819, in the famous Dartmouth College case, that in granting a charter a State entered into a contract relation. The courts, however, did not uphold the contention of the railway companies, and in 1877 the Supreme Court of the United States, in the noted granger cases, declared valid the State legislation fixing railway charges. The railway corporations were compelled to recognize the public nature of the service they were performing, and to acknowledge the authority of the States to regulate the railway business, even to fixing the charges for the same.

The Supreme Court gave the States, in 1877, greater authority over railroads than they now possess. The granger laws fixed rates on all the traffic by rail within the State. Though commodities might be shipped beyond the State or enter the State from outside, and thus become interstate commerce, the railroads must carry the goods while within the State at such rates as the State had fixed. Although the Constitution of the United States vests in Congress the power to regulate commerce among the States, the Supreme Court held in the case of *Peik* v. *Chicago and Northwestern Railway Company* that "until Congress acts in reference to the relations of this company to interstate commerce, it is certainly within the power of Wisconsin to regulate its fares, etc., so far as they are of domestic concern." The language of the court apparently gave the States power to regulate not only intrastate but also interstate traffic until Congress should decide to exercise the power over interstate commerce conferred upon it by the Constitution. The States so interpreted their powers until 1886, when the court in the case of the *Wabash, St. Louis and Pacific Railway Company* v. *Illinois* reviewed its language and decided that the States had no right to regulate interstate commerce, but must confine themselves to intrastate traffic. This Wabash decision greatly limited the authority of the States over railroads, and was one of the influences that led Congress to pass the Interstate Commerce Act in 1887.

The early granger laws were the first efforts of a thoroughly aroused public to apply vigorous remedies to a severe social malady. The laws were strenuously opposed by the railroad companies, and when the panic occurred in 1873, during which many of the railroads were thrown into bankruptcy, it was claimed that their financial difficulties were due in a large measure to the stringent legislation which had been enacted. Though it is possible that

many of the States had proceeded too rapidly and too far in their attempts at regulation, it was not true that the difficulties of the railroads at that time were caused by the State laws. However, the opposition that was aroused and the serious plight of many of the railroad companies brought about the repeal or modification of much of the recently enacted legislation. Minnesota repealed her law of 1874 the year after its passage, and put in its place a law providing for only one commissioner with little more than supervisory powers. In 1878 Iowa repealed her law of 1874, by which a schedule of rates had been fixed, and established a commission without the rate making function. The so-called Potter law of Wisconsin, which was the most stringent of the granger statutes, was repealed after being in force for two years, 1874-1876, and regulation by commission was for the time being entirely abandoned in that State. The Illinois Railroad and Warehouse Commission was one of the few with mandatory powers which was not discarded.

It took but a few years, however, to show that the "railway problem" called for effective regulation, and the pendulum once again swung toward the enactment of rate legislation and the establishment of commissions with mandatory powers. Minnesota again revised her statute in 1885; Iowa, after a ten years' experience with her advisory commission, established a commission with rate making powers in 1888, and several other States took similar action. During the business depression that began in 1893 there was a lull in State legislation, but beginning about 1897 a strong tendency set in toward the creation of State commissions having mandatory powers over railroads. Even those States which had successful advisory commissions have replaced them with commissions of the strong type.

One important feature of the legislation that has been passed in recent years has been to place under the juris-

diction of the commissions not only railroad companies but many other public utility corporations, such as street railway, gas, electric, water, warehouse, telegraph, and telephone companies, in fact all companies which are engaged in supplying utilities of a public nature. Many of the mandatory railroad commissions of former years have been replaced by commissions having authority over several kinds of public utilities. The Illinois Railroad and Warehouse Commission, one of the oldest and most successful of the railroad commissions of the strong type, was superseded in 1913 by a State Public Utilities Commission. In some States the authority of the commissions extends to corporations other than public utility companies. "Corporation commissions" are to be found in Arizona, New Mexico, North Carolina, Oklahoma, and Virginia. Of the forty-eight States, forty-seven now have commissions with powers to regulate railroads and, in some cases, other public utilities and corporations. The District of Columbia now has a Public Utilities Commission with large powers of regulation and control. In eight States the commissions have been established by provisions of the constitution, and their powers amplified and defined by statute; in the other States the commissions have been created by legislative enactment. Delaware is the only State having no commission. The following table shows the types of commissions of the various States:

Public utilities or public service commissions

1	Alabama	7	Indiana
2	California[1]	8	Maine
3	Colorado	9	Maryland
4	Connecticut	10	Massachusetts
5	Idaho	11	Michigan
6	Illinois	12	Missouri

[1] See first note on p. 436.

13 Nevada
14 New Hampshire
15 New Jersey
16 New York
17 Ohio
18 Oregon
19 Pennsylvania
20 Rhode Island
21 Tennessee
22 Utah
23 Vermont
24 Washington
25 West Virginia
26 Wisconsin[1]
27 Wyoming

Railroad commissions

1 Arkansas
2 Florida
3 Georgia
4 Iowa
5 Kentucky
6 Louisiana
7 Minnesota
8 Mississippi
9 Montana
10 Nebraska
11 North Dakota
12 South Carolina
13 South Dakota
14 Texas

Corporation commissions

1 Arizona
2 North Carolina
3 Oklahoma
4 New Mexico
5 Virginia

Court of Industrial Relations

1 Kansas

The powers of the different commissions vary. Some of the commissions have virtually complete control over the business operations of all utility companies operating within their respective States,[2] including the power to revise rates either upon complaint or the initiative of the commission, to suspend changes in rates pending investigation, to correct discriminations, to regulate services, to regulate the issue of securities, to grant or withhold franchises and permission to construct new facilities, to regulate

[1] Called railroad commission, but has jurisdiction over other public utilities.

[2] Arizona, California, Connecticut, Illinois, Indiana, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Ohio, Rhode Island, Vermont, and Wisconsin.

accounting practices, and to require detailed operating and statistical reports. Other commissions have full jurisdiction over public utilities except with regard to the regulation of capitalization;[1] others have limited jurisdiction over railroads and certain specified utility corporations such as street car, telegraph, and telephone companies. A statement of the organization and powers of some of the typical commissions indicates the wide difference existing between the commissions of different States.

The Public Utilities Commission of Illinois, which is one of those having the broadest powers, is composed of five members appointed by the Governor and confirmed by the senate. Each commissioner receives an annual salary of $10,000 and holds office for six years. The general powers of the commission are stated in the law as follows:

> The Commission shall have general supervision of all public utilities, shall inquire into the management of the business thereof and shall keep itself informed as to the manner and method in which the business is conducted. It shall examine such public utilities and keep informed as to their general conditions, their franchises, capitalization, rates and other charges, and the manner in which their plants, equipments and other property owned, leased, controlled or operated are managed, conducted and operated, not only with respect to the adequacy, security and accommodation afforded by their service but also with respect to their compliance with the provisions of this Act and any other law, with the orders of the Commission and with the charter and franchise requirements.

The act provides that the rates of public utility companies must be just and reasonable, that a company may change its rates and rules of service only after 30 days' notice to the commission and may increase rates only after

[1] Idaho, Montana, Nevada, Oklahoma, Oregon, Pennsylvania, Washington, Wyoming.

receiving an order from the commission certifying that the increase is justified, that public utility companies shall not issue stock and bonds without the consent and approval of the commission, that they shall keep accounts and make annual reports in accordance with rules prescribed by the commission, that a public utility company shall not begin the construction of a new plant without receiving a certificate of convenience from the commission, and shall not purchase the securities of another utility company or enter into a contract of purchase, merger or lease with another utility company without having been authorized to do so by the commission. The commission is empowered to revise rates upon complaint or upon its own initiative, to suspend rate schedules pending investigation, to establish demurrage, reciprocal demurrage, storage and switching rules and charges, to require proper facilities for service, to fix standards of service, to order the installation of safety appliances, to make a valuation of the property of a utility company, to inspect books and accounts, and to issue orders for the payment of damages in reparation for overcharges. The orders of the commission are binding unless set aside by judicial proceedings.

New York has a law, similar to that of Illinois, providing for two commissions, one of which supervises the rapid transit system of the City of New York and the other the remaining utilities of the State. The laws of New Jersey, Wisconsin and Massachusetts give the commissions of those States powers similar to those held by the commission of Illinois. The Public Service Commission of Pennsylvania also has similar powers with the exception that it cannot directly regulate the issue of stocks and bonds or suspend rates. The Court of Industrial Relations of Kansas has almost complete power of supervision of the rates and services of railroads, and limited authority over telegraph and telephone companies and those heat, light, water and

power companies which are not owned by municipalities nor operated wholly or principally for the benefit of a city.

The Railroad Commission of Florida is made up of three members who are elected by popular vote and hold office for four years. This commission has mandatory authority with regard to the rates and services of railroads, boat lines and telegraph and telephone companies doing business within the State, but municipal utilities and street railways do not come within its jurisdiction. Among other States having commissions similar to that of Florida are Kentucky, North Dakota, and Arkansas.

The Corporation Commission of New Mexico, which is provided for in the constitution of that State, consists of three members, elected by popular vote and holding office for six years. The commission issues charters for all domestic corporations, licenses foreign corporations to do business within the State, and regulates the rates and services of common carriers and telegraph and telephone companies. The Corporation Commission of Virginia is similar to that of New Mexico, while that of Arizona has much broader powers, which apply not only to railroads but to all public service corporations operating in the State.

In addition to establishing commissions for the purpose of regulating railroads and other public utilities, many States enact statutes limiting and defining the powers and duties of railroads and other utility corporations. A favorite method of regulating railway charges has been the enactment of laws fixing maximum rates and fares. Several States have enacted "two-cent fare laws," and laws establishing freight classifications and maximum freight rates. Car-service and demurrage laws, and laws requiring the elimination of grade crossings, regulating the use of private sidings, regulating train service and establishment of terminal facilities are also common. The operation of railroads in some States is regulated by "full-crew laws," and statutes

relating to head-lights, safety appliances, speed of trains, and the transportation of various kinds of traffic, such as live stock, perishable products and explosives. Discrimination in charges and services, rebates, free passes, and ticket scalping are generally prohibited, and the antitrust laws enacted by numerous States are applicable to railway corporations. Capitalization of railway corporations is regulated by laws placing limits upon the amount and kind of securities that may be issued and the prices at which they may be sold. In many cases these various regulations are included in the statutes creating railroad or public utilities commissions, but often they are embodied in separate enactments.

For several years there has been a growing sentiment that the States have gone too far in their efforts to regulate public utilities. There has been much adverse criticism not only of the laws affecting railroads but of the legislation affecting other public service companies. The criticism has been directed both against the numerous statutes enacted by State legislatures and against the commissions by which the statutes have been administered. Unfortunately, the governors of several States, in making their appointments to public service commissions, have selected men, not because of their ability or fitness for their position, but solely for political reasons. The large salary paid to commissioners in some States, which was intended to induce men of ability to accept places on the commissions, has served rather to make the offices attractive to political place-hunters, whose ability only too often varies in inverse ratio to the influence they are able to exert to secure appointment. The efficiency of a commission depends to a large extent on the character of its members and upon continuity of service. When appointments are made for political reasons the personnel of a commission is likely to change frequently, and, however good the

utilities law, it loses its effectiveness through poor administration.

The chief objections to State regulation of municipal utilities are made by the advocates of municipal home rule, who think that the cities themselves should control and regulate the services and rates of their utilities. As to the present State laws for the regulation of railroads there are three general criticisms: (1) Many of the recent laws are ill-advised and do not serve the best interests of the State or of the country as a whole; (2) the large number and extreme diversity of the laws create a complex and confusing situation which involves both the public and the railroads in needless difficulty; (3) the State regulations often conflict with and nullify action taken by the Federal Government to control and regulate interstate trade.

Laws which impose upon railroads arbitrary and uniform regulations with respect to rates and services may often be unwise. A two-cent passenger fare law of state-wide application may be unjust to roads operating in districts where topographical conditions and the density of traffic are such as to cause a relatively high cost of operation of passenger trains; "full-crew" laws passed by some legislatures have been shown to result in greatly increased expense to the railroads without either an additional measure of safety to the public or any increase in operating efficiency. A few States have arbitrarily reduced rates merely for the purpose of creating a discrimination in local markets against the shippers and traders of other States; at least three States have statutes making it illegal for a railway corporation possessing repair shops in the State to send any of its equipment, which may be repaired there, out of the State for repairs; in some instances railroad companies have spent large sums of money in improving their roadway and purchasing powerful locomotives in order to handle traffic in large units, only to be confronted with a statute limiting

the number of cars which may be included in a single train.

The large number of State laws and the entire lack of uniformity in systems and methods of regulation constitute an even greater source of difficulty than the character of the legislation. Diverse laws with regard to train crews, train speed, safety appliances and signal apparatus often cause needless expense. The control and supervision of capitalization by a large number of authorities, each governed by a different law and having a different plan of procedure, have made much more difficult the problems of securing funds for improvements, of consolidating connecting railroads, and of reorganizing bankrupt roads. At the same time the chief objects of the regulation of capitalization are not always accomplished. The law of one State may be in a measure rendered ineffective by the lack of legislation or by a different kind of law in another State. The manipulation of the finances of the New York, New Haven and Hartford, the Chicago and Rock Island, and the St. Louis and San Francisco roads took place regardless of the fact that many of the States in which these lines operated had presumably excellent laws for the regulation of the financial affairs of railway corporations.

The conflict between State and Federal regulation of railroad rates has been the chief problem growing out of the system of State regulation. Intrastate and interstate traffic are so closely interwoven that a disturbance of the rates on one is bound to affect the rates on the other, and it is consequently impossible to secure a satisfactory system of regulation as long as there is a complete division of authority. Whenever a State endeavors by reducing rates to secure commercial advantages in local markets for its traders, the force of industrial competition tends to compel a corresponding reduction in interstate rates, and the State in effect accomplishes the regulation of interstate trade,

a function which belongs solely to Congress. In the Shreveport Rate case (234 U. S. 342) the Supreme Court held that the Interstate Commerce Commission had power to overrule an order of a State railroad commission establishing intrastate rates which resulted in a discrimination against interstate trade carried on at rates held by the Interstate Commerce Commission to be reasonable. In this decision the Court indicated that Congress had the power to regulate intrastate rates to the extent of removing any discrimination imposed upon interstate commerce by State authority. Since the Interstate Commerce Commission did not have sufficiently explicit powers, before 1920, to enable it to establish intrastate rates which, in the Commission's judgment, would remove any discrimination which might exist, it was necessary, if a harmonious system of rate regulation was to be secured, for Congress to enlarge the Commission's authority. This Congress proceeded to do in enacting the Transportation Act of February 28, 1920.

The Interstate Commerce Act, as amended by the Transportation Act, provides that the Interstate Commerce Commission shall have the power to investigate, either upon its own initiative or upon complaint, "any rate, fare, charge, classification, regulation or practice, made or imposed by the authority of any State." It shall cause the State or States interested to be notified of any such investigation, and may hold joint hearings with any State regulating body. The law further provides:

> Whenever in any such investigation the Commission, after full hearing, finds that any such rate, fare, charge, classification, regulation or practice causes any undue or unreasonable advantage, preference, or prejudice as between persons or localities in intrastate commerce on the one hand and interstate or foreign commerce on the other hand, or any undue, unreasonable, or unjust discrimination against interstate or foreign commerce, which is hereby forbidden and declared to be unlawful, it shall prescribe the rate, fare, or

charge, or the maximum or minimum, or maximum and minimum, thereafter to be observed, in such manner, as in its judgment, will remove such advantage, preference, prejudice, or discrimination. Such rates, fares, charges, classifications, regulations and practices shall be observed while in effect by the carriers parties to such proceeding affected thereby, the law of any State or the decision or order of any State authority to the contrary notwithstanding.

In August, 1920, the Interstate Commerce Commission authorized a general increase of interstate freight rates and passenger fares. A number of State authorities, following the lead of the Interstate Commerce Commission, permitted equivalent increases in intrastate rates and fares. In some States however, the regulating authorities permitted no increases whatever or permitted increases which were substantially less than those allowed by the Interstate Commerce Commission. The railroad companies operating in those States where satisfactory increases were not permitted appealed to the Interstate Commerce Commission to order increases in the rates on intrastate traffic which would bring those rates into harmony with interstate rates. Holding that the low rates on intrastate traffic constituted an unlawful discrimination against interstate commerce, the Commission ordered the roads to advance their intrastate charges. In nearly all cases where the Commission ordered an advance of rates on intrastate business the State authorities appealed to the Federal courts on the grounds that the action of the Commission was a regulation of intrastate commerce by Federal authority not permitted by the Constitution. The lower Federal courts upheld the Commission and declared the law under which it acted to be constitutional. Appeals were taken to the Supreme Court, but the Court has not yet handed down its decision. There seems little reason to believe, however, that the Supreme Court will not sustain the validity of the law. Most students of transportation are of the opinion that Congress

acted wisely in extending the power of the Interstate Commerce Commission so that it could exercise a large measure of control over the entire railroad rate structure of the country.

The Transportation Act provides for the extension of Federal authority into other fields of railroad regulation formerly occupied exclusively by the States. The power given to the Interstate Commerce Commission to regulate the issue of railroad securities was discussed in Chapter VIII. The Act stipulates also that railroad consolidations, authorized by the Interstate Commerce Commission, may be effected notwithstanding the provisions of State laws.

Should the extension of the Federal control of intrastate commerce be held constitutional by the Supreme Court, the authority of the State legislatures over railroads will be greatly modified. The States will still have the power to regulate intrastate commerce, but not to the extent of creating unjust discriminations against interstate trade. The States may correct discriminations in intrastate rates, and may require carriers to establish rates and regulations which are just and reasonable, but the measure of reasonableness will necessarily be that adopted by the Interstate Commerce Commission. Federal and State regulation will be brought into harmony, and the railroad policy of the nation will be in a measure unified.

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CHAPTER XXVI

RAILROAD REGULATION BY THE FEDERAL GOVERNMENT—THE ACT OF 1887

Origin of the demand for Federal regulation, 448. The Windom report of 1874, 449. The Cullom report of 1886, 450. Early attempts at Federal regulation, 450. The enactment of the Interstate Commerce Act of 1887, 451. Chief provisions of the law, 451. The operation of the law; the commission's orders not binding, 456. Power of the commission to secure testimony, 458. The power of the commission to regulate rates, 459. The long and short haul clause, 460. Import rates, 463. Results accomplished by the law of 1887, 464. Needed changes, 464. References, 466.

SHORTLY after the States began actively to regulate railway charges an agitation was begun for the regulation of railroads by the Federal Government. The demand was pressed most urgently by the people of the middle West, who felt keenly the need for cheap transportation facilities. After the close of the Civil War the agricultural and industrial development of the upper Mississippi Valley was especially rapid. Large quantities of grain and other food products were produced, for the surplus of which there was a market in the eastern part of the United States and in Europe, but the high cost of transportation to the seaboard absorbed nearly all the profits of the farmers or made the marketing of produce impossible.

An appeal was made to Congress for legislation and in 1872 President Grant recommended that Congress appoint a committee to investigate the question of securing "cheaper transportation of the constantly increasing western and

southern products to the Atlantic seaboard." Such a committee was appointed by the Senate. Its chairman was William Windom, of Minnesota, and the report made in 1874 contained a full discussion of the regulation of railway transportation. The Windom report (Sen. Rep. No. 307, 43 Cong., 1 sess.) argued at length to prove that Congress had the constitutional power not only to regulate railroads, but to construct and operate them. The committee did not recommend that Congress fix the rates to be charged by the companies, but suggested that Congress should improve and extend the natural waterways and should build a freight railroad from the Mississippi River to the Atlantic. This recommendation was made because the committee thought that the surest way to secure cheap rates was by means of competition, and believing that the railroad companies would combine and thus avoid competition in rate making, the committee advocated "the state ownership or control of one or more lines which, being unable to enter into combination, will serve as regulators of other lines."

The recommendations of the Windom committee overestimated the necessity of enforcing competition in rate making and undervalued the ability of the railroads to cheapen the costs of moving bulky freight. During the ten years following the submission of the Windom report the efficiency of the railroads as freight carriers was so increased that only the Great Lakes, the largest rivers, and a few specially well located canals could carry even heavy articles at costs as low as the rates by rail. Competition in its various forms reduced rates on long-distance traffic between rival cities to a lower figure than the public had supposed possible; but the charges on local traffic to and from the stations served by only one railroad were not correspondingly reduced, and gross discriminations resulted. The public demand for cheap transportation was

changed to a demand for the abolition of unreasonable discriminations.

This is clearly shown by the second important Federal report on railway regulation—the one made in 1886 by a committee of the Senate and called the Cullom report (Sen. Rep. No. 46, 49 Cong., 1 sess.), from the chairman of the committee, Shelby M. Cullom, of Illinois. "The paramount evil," said the Cullom committee, "chargeable against the operation of the transportation system of the United States as now conducted is unjust discrimination between persons, places, commodities, or particular descriptions of traffic." The main object of government regulation was no longer considered to be to secure cheap transportation, but to insure to all persons and to different places relatively equitable charges.

A year after the Cullom report was made the Interstate Commerce Act became a law. Previous to this time numerous attempts had been made to secure legislation. January 20, 1874, the House of Representatives passed the McCreary bill (so named from the chairman of the Committee on Railways and Canals) with provisions similar to the "granger laws" which several States had enacted. The country as a whole was not in favor of applying the granger legislation to the Federal regulation of railroads, but in December 1878 the House passed the Reagan bill, which had been championed by Representative (later Senator) John H. Reagan, of Texas. This was a conservative measure that prohibited pooling and discriminations, required rates to be published, and placed the enforcement of the law in the hands of the courts instead of a commission. The bill applied only to freight traffic and to that carried in carload lots. The Senate did not act on the Reagan bill of 1878. In 1885 the Senate and the House each passed a bill, but legislation was prevented by the differences of the two houses as to the provisions to be included in

the law. It took two years for the House and Senate to agree, and then, February 4, 1887, they compromised on the law which, with many amendments, is the one now in force.

As the States endeavored to regulate the railroads they realized more and more that the problems to be dealt with were closely connected with interstate commerce and could not be handled successfully without the coöperation of the National Government. The demand for Federal action was made by the eastern as well as the western and southern sections of the country as soon as the fact was clearly ascertained that the authority of each State over railway charges was limited strictly to the traffic that did not pass the boundaries of the State. Before 1886 several of the States regulated charges on all the traffic originating at or destined to points within their respective boundaries. In 1886 the Supreme Court, in the Wabash decision referred to in the previous chapter, limited the authority of the State strictly to the *intrastate* traffic and excluded that moving from one State to another. This decision of the Supreme Court greatly narrowed the jurisdiction of each State over railway charges, and increased the need for congressional action.

The Interstate Commerce law of 1887 contained twenty-four sections. It applied to interstate and foreign freight and passenger traffic carried by railroad, or, in cases of continuous shipment, by railroad and water. It did not apply to intrastate traffic nor to interstate or foreign traffic carried entirely by water.

The first section, in addition to defining the scope of the law, provided that all charges should be just and reasonable and declared unlawful every unjust and unreasonable charge; section two prohibited all unjust personal discriminations in the form of special rates, rebates or otherwise; section three forbade discriminations between locali-

ties, commodities, and connecting lines, and required the provision of reasonable and equal facilities for the interchange of traffic. These three sections contained the essential principles of the statute. The law went one step farther in rate regulation than the British law of 1854, which merely prohibited unjust discriminations.

Section four of the statute made it

> unlawful for any common carrier subject to the provisions of this act to charge or receive any greater compensation in the aggregate for the transportation of passengers or of like kind of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the same direction, the shorter being included within the longer distance.

This "long and short haul clause" of the act was inserted in the law because of the prominence in this country of the particular form of discrimination against which it was directed. The competition of rival railroads brought about such reductions in the charges for through traffic as, in many cases, to result in higher rates to intermediate points than were charged to more distant points. There was much difference of opinion regarding the advisability of including section four in the law. The House of Representatives favored its inclusion in the act and its enforcement under all circumstances, but the Senate foresaw that unless the provisions of the law were made less rigid, carriers might frequently lose their traffic at competitive points and be obliged because of the law to depend even more largely for their income upon the receipts from the local traffic. The enforcement of a long and short haul clause under those conditions would injure both the local shipper and the carrier. The views of the Senate prevailed, and the Interstate Commerce Commission established by the act was given power to suspend the operation of section

four for certain carriers in special cases after an investigation of the conditions of competition.

Section five prohibited competing railroads from pooling their freights or their aggregate or net earnings. No provision of the law has been more debated than this antipooling clause. It was insisted upon by the House against the judgment of the Senate. The House believed that enforced competition in rate making by rival carriers would be better for the public than freedom of interrailway coöperation. It now seems clear that the prohibition of pooling was a mistake, and that the national regulation of railroads would have been more successful had pooling been permitted.

The sixth section of the law stipulated that all rates and fares should be printed and posted for public inspection at all stations. No advance in rates was to be made except after 10 days' public notice,[1] and all charges, other than those published, were declared unlawful. Schedules of rates and charges were to be filed with the Interstate Commerce Commission at Washington, and the commission was to be promptly notified of all changes in the schedules.

Section seven declared it unlawful for any carrier subject to the act to interrupt unnecessarily the continuous passage of freight from the point of shipment to the place of destination. The object of this section was to prevent interference with through shipments merely for the purpose of changing an interstate shipment into two or more intrastate shipments.

Section eight rendered a carrier liable for damages on account of losses sustained by any person or persons through a violation of the law; section nine stipulated that a person claiming to be damaged could bring action for recovery

[1] By the law of 1887 reductions in rates could be made without previous public notice, but an amendment in 1889 required three days' notice of a reduction.

either before the Interstate Commerce Commission or in a district or circuit court; section ten provided that a fine not exceeding $5,000 should be imposed for each violation of the law. In 1889 certain violations were made punishable by both fine and imprisonment. It was stipulated, however, that if the common carrier disobeying the law was a corporation, only the officer or agent who violated the law should be punished.

Section eleven established an Interstate Commerce Commission of five members to be appointed by the President of the United States with the consent of the Senate. Not more than three commissioners were to be of the same political party. The commissioners were not to own railway securities, and were not permitted to "engage in any other business, vocation, or employment" while in office. The term of office was six years, and the salary was placed at $7,500 a year (section eighteen). The principal office of the commission (section nineteen) was fixed in the city of Washington.

Sections twelve to twenty-one outlined in detail the powers and duties of the commission. It was given power to inquire into the management of the business of all common carriers subject to the law and was authorized to compel carriers to produce their books and papers and give testimony. No witness might refuse to testify, even though his testimony might tend to incriminate himself, but such evidence or testimony was not to be used "against such person on the trial of any criminal proceeding." Inquiries could be instituted either upon complaint or upon the commission's own motion. Whenever an investigation was made, the commission was to make a report in writing, which was to include its findings as to fact and its recommendations as to what reparation, if any, should be made by the common carrier to any person or persons found to have been injured. If after investigation the commission was

of the opinion that the law had been violated it was to serve notice to the violating carrier to desist from its illegal acts and, in case of injury to a complainant, order that reparation be made.

Whenever a common carrier refused to obey any lawful order or requirement of the commission, it was the duty of the commission to bring proceedings in a circuit court of the United States to compel the carrier to obey. The court was empowered, if it found, after hearing, that a lawful order of the commission had been disobeyed, to issue a writ of injunction or other process to restrain the carrier from disobedience. It was provided that, in the hearing, the report of the commission should be "*prima facie* evidence of the matters therein stated."

The commission was authorized to require from each carrier subject to the act of 1887 an annual report containing detailed information concerning capitalization, equipment, labor staff, receipts, operating and other expenses, and "a complete exhibit of the financial operations of the carrier each year, including an annual balance-sheet." The commission was also given power to prescribe a uniform system of accounts to be adopted by the carriers, but, as was explained in Chapter XVI, this provision was ineffective. Section twenty-one provided that the commission should make an annual report, containing such information and data as might be considered of value in the determination of questions connected with the regulation of commerce, together with recommendations as to additional legislation.

The operation of the Interstate Commerce law of 1887 was very unlike what its framers expected, partly because of defects in the law itself, but chiefly because the courts so interpreted the main provisions of the act as greatly to limit its scope. The law was initial legislation by Congress upon a problem of great magnitude, and it was hardly possible that all the economic and legal questions

involved should be foreseen. The operation of the law centered around the work of the Interstate Commerce Commission as an investigating body and as a board for the equitable adjustment of transportation charges and the correction of unjust discriminations. It was both in determining the powers which the commission possessed under the law and in interpreting the meaning of various sections of the act itself that the courts prevented the statute from accomplishing the purposes intended by its framers. Though not proving to be of great value as a means of securing adequate railway regulation, the Act of 1887, nevertheless, accomplished a vast amount of good, and its very defects, as they were exposed, were of educational value in indicating what was needed in order that a satisfactory system of regulation might be established.

One of the chief weaknesses of the law was that it failed to make the orders of the commission binding upon the railroads. When the commission made a decision and issued an order, the carriers against whom the order was directed could obey if they chose to do so, or they could, without penalty, ignore the order entirely. In the latter case the commission or other interested parties could apply to the Circuit Court of the United States for a writ to compel obedience; the burden of initiating the action to test the legality of the orders of the commission never fell upon the carriers. The Circuit Court to which the commission might appeal for the enforcement of its decision might issue an order, which in turn could be carried on appeal to the Supreme Court. Sometimes years would elapse before it became known whether the order of the commission was to have the binding effect of law.

This delay, due to the method provided for securing the enforcement of the commission's orders, was accentuated by the attitude which the courts assumed toward the commission and its decisions. It was supposed by the framers of

the act of 1887 that the commission was to have the entire work of investigating and deciding upon the facts in all cases which should come before it, and that the courts would exercise only the power of reviewing questions of law which might be involved in enforcing the commission's orders. Such, however, was not the practice of the courts. They allowed the defendants to introduce evidence which had not been submitted to and passed upon by the commission. This ruling of the courts, which was first made in 1889,[1] greatly reduced the effectiveness of the commission as an investigating body. The parties complained against often regarded the commission's investigation as a preliminary inquiry, and instead of answering the charges fully before the commission, reserved the most important testimony for their defense for a later trial before the court, where the entire case would be tried *de novo*. This practice caused a duplication of work, added greatly to the expense of trying complaints, caused long delays in adjudication and tended to discourage persons having grievances from bringing complaints before the commission. The abuse became so burdensome that the Supreme Court discountenanced the practice, declaring that it was clearly intended by the law that all material facts should be presented in the hearing before the commission.[2] The question of procedure could not be definitely settled, however, without a modification of the law.

Not only did the courts adopt the practice of investigating the material facts involved in cases appealed to them for adjudication, but they rendered decisions which were based quite as much upon their own as upon the commission's interpretation of the facts, thereby virtually constituting them-

[1] By Associate-Justice Jackson in *Kentucky and Indiana Bridge Co.* v. *Louisville and Nashville Railroad Co.*, decided January 7, 1889 (37 *Federal Reporter* 567).

[2] 162 U. S. 184; the Social Circle case, decided in 1896.

selves fellow commissioners. Congress undoubtedly intended to give to the commission the final decision as to the economic questions involved in railway regulation and to confine the courts to the consideration of questions of law. It was impossible to keep legal and economic issues entirely distinct, especially in cases involving the reasonableness of rates; but even in cases where the separation of the issue could be clearly made the courts failed to confine themselves to questions of law.

In addition to lessening the efficiency of the commission as an administrative body by adopting the custom of receiving *new* evidence (not previously presented to the commission) and by basing their decisions on their own interpretation of the facts, the Federal courts further restricted the powers of the commission by refusing for six years—from 1890 to 1896—to compel witnesses to give testimony of an incriminating nature. The law stipulated that no witness might refuse to testify on the ground that his testimony might tend to incriminate him, but protected the witness from *criminal* prosecution based on the testimony he might give as a witness. The courts maintained that the witness must be "afforded absolute immunity against future prosecution" (*Counselman* v. *Hitchcock,* 142 U. S. 547), in order to enjoy the protection guaranteed to him by the fifth amendment of the Constitution, which contains the clause "nor shall he be compelled, in any criminal case, to be a witness against himself." In 1893 Congress passed a law which gave a witness protection against any prosecution, civil or criminal, on account of any testimony or evidence submitted. This law did not, however, immediately settle the question, because certain inferior Federal courts still maintained that the witness was not afforded the protection guaranteed him by the fifth amendment. The matter was finally disposed of by the United States Supreme Court in the Brown case, decided

March 23, 1896 (*Brown* v. *Walker,* 161 U. S. 591). One Theodore F. Brown, auditor of the Alleghany Valley Railroad, refused to testify before the Federal Grand Jury of the Western District of Pennsylvania regarding rebates alleged to have been given by two fellow officers. The district judge held him guilty of contempt of court, and when the case reached the Supreme Court on appeal it was decided that the full immunity from prosecution afforded by the Interstate Commerce law as amended in 1893 was all the protection a witness could claim under the Constitution. Thus, in 1896, the commission definitely obtained compulsory power of investigation, but for much of the time for six years it had been able to secure only such facts as witnesses might choose voluntarily to give.

It was thought that the law of 1887 would serve as a satisfactory means of securing the regulation of rates on interstate traffic, but in this matter also the act was deprived of effectiveness by decisions of the courts. As was stated above, the law forbade unreasonably high and unjustly discriminatory charges, established a commission to decide whether rates and fares were reasonable and just, and provided that upon the complaint of any shipper, passenger or other interested party, or upon its own motion, the commission might investigate specific charges and practices of the carriers to determine whether the law was being observed. If the commission found that carriers were charging unreasonable or unjust rates, or were engaging in practices prohibited by the law, it might order the carrier to desist from making such charges or engaging in such practices, and might award damages to complainants who had suffered injury. For ten years it was the practice of the commission, when ordering a carrier to desist from charging an unreasonable rate, to name the rate that would be reasonable, and to order the carrier to put in force a rate not exceeding the one named by

the commission; but in 1897 the Supreme Court in the Maximum Rate case (*Interstate Commerce Commission* v. *Cincinnati, New Orleans and Texas Pacific Railway Company,* 167 U. S. 479) decided "that the power to prescribe rates or fix any tariff is not among the powers granted to the commission." By this decision the commission's power over rates was limited to deciding merely what ought not to have been.

Not only was the law made ineffective for the purpose of securing the establishment of reasonable rates, but its main provisions for the protection of shippers and localities against unjust discriminations were greatly limited in scope. Though the Act of 1887 declared only published rates lawful, reductions could be made on short notice, and to prove that preferential treatment had been accorded to individual shippers it was necessary to show that rates lower than published rates had actually been given, and that other shippers had been charged higher rates at the same time for similar shipments. Under these conditions actual proof of personal discrimination was virtually impossible, and this abuse continued to flourish notwithstanding the attempts of both the commission and the courts to put a stop to it.

It was thought that one of the most common forms of place discrimination had been guarded against in the fourth section of the law of 1887, which contained the prohibition against charging more for a shorter than for a longer haul "over the same line, in the same direction, the shorter being included within the longer distance." This section made a specific application of the general principle that no "undue or unreasonable preference or advantage" should be given "to any particular person, firm, corporation, or locality, or any particular description of traffic." The importance of section four was not lessened, however, by the fact that it was but a specific application of section three.

Of the transportation abuses in the United States due to competition and demanding government regulation, none was so great in 1887 as that of local discrimination whereby the smaller non-competitive points were made to pay higher rates than those places having several rival carriers. The local points were not always charged rates which were in themselves exorbitant and unreasonable, but they were placed at a distinct disadvantage in competition with points having more than one railroad. In many instances the discrimination involved a greater charge for a shorter than for a longer haul, and it was to correct this particular abuse that section four of the law of 1887 was formulated.

The restriction in section four that the charge for the short haul should not exceed that for the longer one applied to "the transportation of passengers or of like kind of property, *under substantially similar circumstances and conditions,*" and "over the same line." The scope of the section depended upon what was meant by the "same line" and by "similar circumstances and conditions." For a while it was held by some courts that a joint line composed of two or more roads formed an individual line distinct from those formed by the roads which together made up the joint line, and, accordingly, that shipments over the joint line and over the component roads were not shipments "over the same line." On this ground it was contended that the through or joint-line charges might be less than the charges for a shipment over one of the roads forming the joint line. Since a large part of interstate railway traffic consists of joint-line business, this definition of the word "line" threatened to rob the fourth section of much of its validity; but in 1896 the Supreme Court in the Social Circle case (*Cincinnati, New Orleans and Texas Pacific Railway* v. *Interstate Commerce Commission,* 162 U. S. 184) refused to accept the narrow technical definition of the word line, and held that the

charges on one of the component roads must not exceed the joint-line charge.

The interpretation which the Supreme Court put upon the phrase "under substantially similar circumstances and conditions" was much less fortunate for the commission and for its work of railway regulation. One of the first questions which the commission was called upon to decide in the administration of the law was what constituted such dissimilarity of circumstances and conditions as to justify a railway company in charging more for a shorter than for a longer haul. The reason why the railroads made such discriminations in favor of the longer haul was competition. The competition of the railroad was sometimes with rival waterways not subject to the Interstate Commerce Act, and sometimes with other railways regulated by that law. As it was not the intention of Congress in passing the Act of 1887 to do away with competition among the carriers subject to that law, the commission ruled that the competition of rival railways, each subject to the regulation provided for by the act of Congress, did not constitute the dissimilarity of circumstances and conditions to which the fourth section of the law referred. The competition of railways with waterways—a different kind of transportation agency, the traffic upon which was not subject to governmental regulation—was, however, held to create circumstances and conditions which were dissimilar and which might justify a less charge for the longer distance. Such was uniformly the ruling of the commission until November 1897, when the Supreme Court in the Troy case (*Interstate Commerce Commission* v. *the Alabama Midland Railway Company and Others,* 168 U. S. 144) decided that competition between rival railways might create dissimilarity of circumstances and warrant a disregard of the fourth section.

This ruling of the Supreme Court deprived the fourth

section of the Interstate Commerce law of most of its vitality. It was included in the law to prevent a very prominent kind of discrimination that was caused by competition. The law did not remove the cause, but sought to limit the operation of the cause by declaring the resulting practices illegal. The court virtually held in the Troy case that the result was justified by the presence of the cause.

Another kind of rate discrimination which it was attempted to correct by the application of the law of 1887 was that made between commodities of domestic and of foreign production. Goods imported into this country are frequently shipped on through bills of lading from the foreign port to the interior American city of destination, and the railroad charge from the port of entry in the United States to the point of destination is a part of a through rate. This through rate fluctuates with the variations in ocean freight rates, and the portion received by the railroad in the case of many articles is less than the rate charged for carrying domestic goods between the seaboard and interior cities. The importer of such articles is favored more than the domestic shipper. Indeed, the entire through rate from the foreign port to the interior point in this country is sometimes less than the charge on domestic commodities from the seaboard to the same inland city. In the Import Rate case, the Interstate Commerce Commission took the ground that it could not properly consider the circumstances and conditions of competition which might create reasons for charging low rates on import traffic, and that a higher charge on domestic commodities was an unjust discrimination. This decision, after being twice sustained in appellate courts, was reversed by the Supreme Court, March 30, 1896 (*Texas and Pacific Railway Co.* v. *Interstate Commerce Commission,* 162 U. S. 197), the court holding that by the law the commission was bound to consider the circumstances under which foreign trade was carried on, and that the Act of

1887 did not expressly prohibit the discrimination in favor of foreign commodities. Though widening the scope of the law, the Supreme Court opened the door for discrimination.

Although the law of 1887 failed to accomplish the main purpose for which it was enacted—the equitable adjustment of rates and fares—because of the interpretations placed by the Federal courts on its most important provisions, it did, nevertheless, have many important results: (1) Publicity of rates was secured, and the public knowledge of railway affairs was increased, by the excellent reports and statistics published by the Interstate Commerce Commission; (2) the law was of service in bringing about the reduction of the number of freight classifications in the country; (3) the commission, by its informal as well as by its formal investigations, did much to bring about a better adjustment of railway charges, as between different localities, different commodities, and different shippers; (4) the work of the commission was of great educational value. Its reports discussed in a clear and comprehensive manner the important phases of the railway questions as they presented themselves year by year, and its decisions developed a serviceable and valuable administrative code regarding railway regulation. The experience under the law indicated clearly the changes which should be made in the act in order that the task of railway regulation might be satisfactorily accomplished. By the close of the nineteenth century the need for at least five changes in the law was clear. It was evident:

1. That a more effective means of preventing personal discrimination and discrimination between places should be devised. The difficulty of producing the proof of preferential treatment which the courts required, and the interpretation of the long and short haul clause prevented the effective use of sections three and four of the law of 1887.

2. That the Interstate Commerce Commission, in order to

perform its chief tasks—that of establishing reasonable railway charges and that of correcting discriminations—should have the power to decide what constituted a reasonable and lawful rate; and that after the commission determined by means of a full and careful investigation that a particular rate charged by a carrier was unreasonable, it should have the power to name the rate which under the existing circumstances would be reasonable and lawful.

3. That the decisions and orders of the commission as to rates and other matters should be binding upon the carrier, unless the enforcement of the order should be suspended by an injunction of a Federal court acting upon the appeal of the carrier. The Act of 1887 erred in permitting a carrier without penalty to ignore the order of the commission and in compelling the commission to initiate the legal proceedings necessary to determine the validity of its orders.

4. That the procedure in the judicial review of the orders of the commission should be more carefully and clearly defined. The commission should be the judge as to the facts in controversies between the carriers and the public, and the court in reviewing the orders of the commission should not go behind its findings as to fact, when based upon evidence.

5. That the commission should possess the power, under such restrictions as would safeguard the business of the carriers, to inspect and audit the accounts of railways engaged in interstate commerce. By giving the commission these powers it would be possible for it to prescribe a uniform system of accounting, the detection of discriminations would be made easier, and the value of the statistics of railways would be greatly increased.

Virtually all of these needed changes in the law of 1887, and other modifications of great importance, were made by the statutes enacted in 1903, 1906, and 1910. In the following chapter the legislation of these years will be

discussed together with the other Federal laws which have been enacted for the regulation of railroads.

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CHAPTER XXVII

FEDERAL LEGISLATION FROM 1903 TO 1914

The Elkins Act of 1903, 467. The Expediting Act of 1903, 468. Enactment of the Hepburn amendment of 1906, 469. Main provisions of the Hepburn amendment, 469. The question of judicial review, 474. The grounds upon which the courts set aside orders of the commission, 475. The Mann-Elkins Act of 1910, 477. Other amendments to the Interstate Commerce Act, 1910-1915, 480. The Federal Anti-trust law applicable to railroads, 483. Federal regulation of railroad operation, 484. General character of the system of Federal regulation as it existed in 1910, 486 The need for modification, 486. References, 487.

THE first important Federal law for the regulation of railways enacted after the passage of the law of 1887 was the Elkins Act, which was approved February 19, 1903. This law dealt almost exclusively with the question of personal discrimination, and was designed to meet the growing problem of monopolization of production and trade by great industrial combinations, many of which were fostered and encouraged by the preferential treatment which they secured from the railroads. Not only the general public but the railroad corporations also were anxious to put an end to the existing system of rebates and preferential rates. Managers of railways had long been convinced that needless losses of revenue were incurred on account of the rebating evil, but until a more effective law was enacted to prevent the practice they were unable to offer a combined resistance to the pressure exerted by large shippers to secure preferential treatment. The Elkins Act was intended to protect both the public and the railroads.

First of all, the law made corporations as well as their agents liable for violation of the laws to regulate interstate commerce, thereby changing the provisions of the law of 1887, under which penalties could be inflicted only upon the agents of carriers which had a corporate form of organization. The penalty of imprisonment for deviation from published rates, which was provided for in 1889, was abolished, leaving a fine as the only method of punishment. The most important feature of the act was that it made departure from published rates the sole test of discrimination. Under this law it is not necessary, in order to prove discrimination, to show that one shipper has received a lower rate than another for similar traffic; it is sufficient merely to show that the railway company has made a deviation from its published schedule of rates. Any such deviation or any offer to make such a deviation was made punishable by a fine of not less than $1,000 and not more than $20,000. Moreover, the receiver of the rebate as well as the giver was to be regarded as guilty of violating the law. As an additional means of preventing discrimination the Elkins Act provided that whenever the Interstate Commerce Commission should have reasonable ground to believe that a carrier was committing a discrimination forbidden by law, a petition alleging the facts might be presented to a Circuit Court of the United States, which, upon being satisfied of the truth of the allegation, should issue an order requiring a discontinuance of the discrimination and an observance of published rates.

Another law, the Expediting Act, was passed on February 11, 1903, for the purpose of securing more effective regulation of the railroads. This act provided that in any suit in equity brought in any Circuit Court of the United States under the Act to Regulate Commerce of 1887, the Sherman Antitrust Act of 1890, or any other acts having a like purpose, wherein the United States was a complainant, the

Attorney General might file with the clerk of the court a certificate stating that in his opinion the case "is of general public importance," whereupon the case should be given precedence over others and in "every way expedited and be assigned for hearing at the earliest practicable day" before not less than three Federal court judges. Appeals from the decision of the Circuit Court were to be made only to the Supreme Court and within 60 days after the entry of the decree of the circuit court. It was hoped by this law to counteract the tendency toward delay which had prevented the effective administration of the Act of 1887.

While the legislation of 1903 was effective in restricting the practice of personal discrimination, it did not solve that problem entirely and it contributed but little toward the solution of the other pressing and equally important problems of railway regulation, such as those of securing reasonable rates, of increasing the powers of the Interstate Commerce Commission, of regulating accounting practices, and of correcting other forms of discrimination. Increasing pressure was brought to bear upon Congress to modify the law of 1887, and in 1906 an amendment to that act was passed, by which its scope was vastly extended. The law of 1906, known as the Hepburn amendment, marked the real beginning of the regulation of railroad rates and services by the Federal Government. By it most of the defects of the law of 1887 were corrected.

The Hepburn amendment, in the first place, extended the scope of the Interstate Commerce Act by making it applicable not only to railroads, but to express companies, sleeping-car companies, and pipe lines for transporting oil or other commodities except water and gas. The term "railroad" was defined to include "switches, spurs, tracks and terminal facilities," and the term "transportation" to comprehend "cars and other vehicles and all instrumentalities and facilities of shipment or carriage, irrespective of owner-

ship or of any contract, expressed or implied, for the use thereof and all services in connection with the receipt, delivery, elevation and transfer in transit, ventilation, refrigeration or icing, storage and handling of property transported," thereby bringing under the operation of the act industrial railroads, private car lines and all other agencies connected directly with railroad transportation.

The provisions of the Act of 1887 with reference to reasonable rates, discrimination, interchange of traffic, the "long and short haul clause" and pooling were retained. The railroads were required, upon application, to construct and maintain reasonable switch connections with any lateral branch line of railroad or with any private side track where such connection was reasonably practicable and would furnish sufficient business to justify its construction. In an attempt to meet a form of discrimination practiced by coal-carrying railroads which were heavily interested in mining the coal carried over their lines, a "commodities clause" was inserted in section one of the law, providing that no road should transport in interstate business "any article or commodity, other than timber and the manufactured products thereof, manufactured, mined, or produced by it, or under its authority . . . except such articles or commodities as may be necessary and intended for its use in the conduct of its business as a common carrier."

The requirements as to publicity of rates were retained and carriers were forbidden to engage in the transportation business unless schedules of rates were filed with the Interstate Commerce Commission and published in accordance with the provisions of the law. It was stipulated, moreover, that no change should be made in rates or fares except after 30 days' notice both to the public and to the Interstate Commerce Commission. The commission was given authority, however, to modify the requirements as to

giving notice if good cause could be shown for such action. The penalty of imprisonment for deviation from published rates and other forms of unlawful discrimination, which had been abolished in 1903, was restored, and specifically made applicable to the shipper as well as to the carrier. The sections of the law conferring upon persons injured by violations of the Interstate Commerce Act the right to bring action for damages either before the Interstate Commerce Commission or the Federal courts was retained. Free transportation of passengers and free passes, except in specified cases, were forbidden under a penalty of fine. The so-called Carmack amendment provided that a carrier receiving traffic for interstate shipment should issue a bill of lading therefor, and should be liable to the lawful holder of the bill of lading for any loss, damage or injury to the property caused by any carrier over whose lines the shipment might pass. The carrier issuing the bill of lading was entitled to recover from the carrier on whose line the damage was caused.

The Elkins Act against discrimination was strengthened by adding an amendment providing that any shipper receiving a rebate of any kind from a carrier should, for that practice, forfeit to the Federal Government a sum equal to three times the amount received in the form of rebates during a period of six years previous to the beginning of the action.

The most important and significant features of the Hepburn amendment were the provisions relating to the Interstate Commerce Commission. The membership of this body was increased from five to seven, with the provision that not more than four should be of the same political party, the term of office was changed from six to seven years, the annual salary of each member fixed at $10,000, and the powers and duties of the commission were greatly extended.

The leading change with respect to the powers of the commission was that it received the rate making authority, which it had been denied under the law of 1887, by the decision of the Supreme Court in the Maximum Freight Rate case. By section fifteen of the law, as revised in 1906, the commission was authorized, when, after full hearing upon a complaint, it should be of the opinion that any rates or charges or any regulations or practices affecting charges were "unjust or unreasonable or unjustly discriminatory, or unduly preferential or prejudicial or otherwise in violation of any of the provisions of this Act" to "determine and prescribe" just and reasonable rates, regulations and practices to be thereafter observed by the offending carrier. It was stipulated that rates and fares so determined should be the maximum rates and fares which the railroad might charge. The commission was also authorized to establish through routes and joint rates, to prescribe the division of such rates, and to fix the compensation to be paid by a carrier to shippers who, as owners of property transported, should assist in its transportation by rendering service of any kind or by furnishing equipment for the use of the carrier.

Of almost equal importance with the provision authorizing the commission to issue orders fixing maximum rates was the provision declaring that all orders of the commission, except those for the payment of money, "shall take effect within such reasonable time, not less than thirty days, and shall continue in force for such period of time, not exceeding two years, as shall be prescribed in the order of the Commission, unless the same shall be suspended or modified or set aside by the Commission, or be suspended or set aside by a court of competent jurisdiction." Failure to comply with orders of the commission with respect to rates which were not set aside by judicial proceedings was made punishable by a fine of $5,000 for each offence,

and in case of continuing violation it was stipulated that each day should be a separate offense. Under these provisions the carriers could no longer ignore the orders of the commission without fear of penalty, and the burden of initiating the litigation to test the validity of the commission's orders was in effect shifted to the carrier—a decided improvement over the provisions of the act of 1887, which required the commission to initiate judicial proceedings before it could secure enforcement of its orders. It was provided, however, that if a carrier failed or neglected to obey any order of the commission, other than for the payment of money, the commission might apply to a Circuit Court for a writ of injunction or other process to compel obedience, and that the court should enforce the commission's order if after hearing it should appear that the order had been "regularly made and duly served."

Another great advance in regulation was made in the Hepburn Act by conferring upon the Interstate Commerce Commission the power to prescribe a uniform system of accounts for railroads engaged in interstate commerce. It was made unlawful for the carriers to keep accounts in any form other than that prescribed by the commission, or to destroy, mutilate or falsify their records. To make it possible for the commission to secure uniformity in accounting it was authorized to employ special agents and examiners to inspect all accounts and records of the carriers. The commission was also authorized to require from the carriers, in addition to the customary annual reports, monthly reports of earnings and expenses, and periodical and special reports concerning any matters about which the commission was required by law to keep informed. By this section of the law, publicity of railway operations was secured, which has afforded a measure of protection to the investing public and assistance to the commission in exercising its rate making functions, while the railroads themselves

have been able to practice the economies made possible by the scrutiny and comparison of well-kept standardized accounts.

One of the chief problems with which Congress was forced to wrestle in the preparation of the Hepburn Act was that of judicial review of the commission's orders. Should the courts be permitted to exercise the power of "broad review," that is, to base their decisions not only upon the law but also on their interpretation of the facts presented in the evidence, or should they be confined solely to the consideration of questions of law? No agreement could be reached as to how the *power* of the courts should be stated, and in fact it was doubted whether Congress had authority to limit or define in any way the power of the Federal judiciary. The Constitution provides that the "judicial power" of the United States "shall extend to all Cases, in Law and Equity, arising under this Constitution, the Laws of the United States. . . ." Congress can create or abolish Federal courts, other than the Supreme Court, and can define the field of jurisdiction of the courts which it creates, but whether Congress may determine the extent to which the judiciary may consider facts in determining causes in equity, and particularly in suits involving injunctions, is a different matter. The result of the controversy in Congress was that nothing was stated in the Hepburn Act concerning the grounds upon which the courts might base their decisions when reviewing the orders of the commission. Authority was expressly given to Circuit Courts of the United States to annul, suspend, or set aside orders of the commission, but it was provided that no injunction should be issued restraining the enforcement of an order except on hearing after five days' notice to the commission.

The provisions of the Expediting Act of 1903, which were previously applicable only in suits in which the Government

was the complainant, were now made applicable to suits brought to set aside orders of the commission, including hearings on applications for a preliminary injunction, and to proceedings in equity to enforce any order or requirement of the commission. With the assurance that the commission should be notified of applications for restraining orders and that hearings should be held before at least three judges within as short time as possible after suits were filed, it was certain that neither delay nor overhasty action would take place in the judicial investigations of the commission's orders. In case of appeal from a decree of the Circuit Court to the Supreme Court, the cause was to take precedence over all other causes except criminal causes. Appeals from interlocutory decrees granting or continuing injunctions were to be made within 30 days instead of 60, and were to have precedence over all other causes except causes of a similar character and criminal causes. Another clause of the new law, intended to facilitate more speedy action in judicial procedure, authorized the commission, in making its written report on any investigation, to state its conclusions and order "in the premises," except in cases where damages were awarded, when it was necessary that the report should include all findings of fact on which the award was made. It was no longer necessary in event of appeal from orders not involving damage awards for the commission to prepare a *prima facie* case with all the evidence set forth.

Though the act of 1906 did not specify the grounds upon which the Federal courts could annul the orders of the commission, the courts have, in practice, confined their activities to a consideration of the law, leaving unquestioned the commission's findings as to facts which are based on the evidence presented in the hearings before the commission. It was clearly the intention of Congress that the commission was to be considered as a competent and effective ad-

ministrative board, whose orders should have the same standing as legislative enactments, as long as they were confined to the field in which the commission was by the statute authorized to act. That is, it was clearly intended that the orders of the commission should be set aside only when the commission had exceeded its statutory powers or when the orders were in conflict with the Constitution. The attitude of the Supreme Court on the question of judicial review has been best set forth in the Illinois Central Railroad case (215 U. S. 452, 470), in which the language of the court was as follows:

Beyond controversy, in determining whether an order of the Commission shall be suspended or set aside, we must consider (*a*) all relevant questions of constitutional power or right; (*b*) all pertinent questions as to whether the administrative order is within the scope of the delegated authority under which it purports to have been made; and (*c*) a proposition which we state independently, although in its essence it may be contained in the previous one, viz., whether, even although the order be in form within the delegated power, nevertheless it must be treated as not embraced therein, because the exertion of authority which is questioned has been manifested in such an unreasonable manner as to cause it, in truth, to be within the elementary rule that the substance, and not the shadow, determines the validity of the exercise of the power. *Postal Telegraph Cable Co.* v. *Adams*, 155 U. S. 688, 698. Plain as it is that the powers just stated are of the essence of judicial authority, and which, therefore, may not be curtailed, and whose discharge may not be by us in a proper case avoided, it is equally plain that such perennial powers lend no support whatever to the proposition that we may, under the guise of exerting judicial power, usurp merely administrative functions by setting aside a lawful administrative order upon our conception as to whether the administrative power has been wisely exercised. Power to make the order and not the mere expedience or wisdom of having made it, is the question.

The Supreme Court therefore refuses to consider or interpret the facts at issue merely in order to arrive at a conclusion as to the "wisdom or expediency" of the commission's orders, but considers them only when necessary to do so in determining the *legality* of the orders. As the court stated in the Los Angeles Switching case (234 U. S. 294), the conclusions of fact of the commission, when based upon evidence, are not open to review, and the court will not "substitute its judgment for that of the Commission upon matters of fact within the Commission's province." As to the former practice of the courts in admitting new evidence, even had the dictum of the Supreme Court on this point in the Social Circle case not been observed, the fact that the commission's orders became binding automatically, unless set aside by a Federal court, was sufficient to induce the railroads to present their case in as complete form as possible in the hearing before the commission and not to wait until the case reached the courts to give the important features of their defense.

While the Hepburn amendment went a long way toward correcting the defects of the act of 1887, still other changes in the law were deemed advisable, and in 1910 the Mann-Elkins amendment was passed, extending the powers of the Interstate Commerce Commision, altering the procedure in judicial review of the commission's orders, and making other important changes.

A radical addition to the power of the commission was made by vesting that body with authority to suspend changes in railway rates. It was stipulated that whenever a carrier should file with the commission any schedule stating a new rate or fare, or classification or practice affecting rates or fares, the commission might, either upon its own initiative or upon complaint, enter upon an investigation of the reasonableness of the proposed change, and, pending the investigation, might suspend the new schedule for a period

of not more than 120 days beyond the time when the schedule would otherwise become effective. If the hearing could not be concluded within the original period of suspension (120 days), the time of suspension might be extended for a further period, not exceeding six months. After full hearing, whether completed before or after the change went into effect, the commission might make such order in reference to the fare, rate, or classification as would be proper in a proceeding initiated after the change became effective. It was stipulated that at any hearing involving a rate increased after January 1, 1910, or a rate sought to be increased after the enactment of the law, the burden of proof to show that the increased rate or proposed increased rate was just and reasonable should be upon the carrier. It was by this provision of the law that the railroads of the eastern part of the United States were prevented in 1910 and again in 1913 from increasing their rates. The discretionary power of the commission was enormously increased and its control over interstate rates, with respect to increases, at least, was rendered virtually absolute.

Another noteworthy feature of the law of 1910 was the revision of the long and short haul clause contained in the fourth section of the Interstate Commerce Act. It will be remembered that this clause, as expressed in the act of 1887, had been of but little effect because of the interpretation by the courts of the words "under substantially similar circumstances and conditions." These words were now removed, and carriers were prohibited from charging more for a shorter than for a longer haul over the same line and in the same direction, the shorter being included within the longer distance, unless they were expressly authorized to do so by the commission. Two other minor changes were made in the fourth section: carriers were forbidden to charge a greater compensation as a through rate than the aggregate of the intermediate rates over the same line or

route; and railroads reducing rates at any time because of water competition were forbidden to raise such rates again, unless, after a hearing before the commission, it could be shown that the proposed increase rested upon changed conditions other than the elimination of water competition.

The third leading feature of the Mann-Elkins Act was the creation of a special Commerce Court to hear (1) suits brought to enforce the orders of the Interstate Commerce Commission, other than for the payment of money, (2) suits brought to set aside orders of the commission, (3) cases involving the provisions of the Elkins Act of 1903 concerning rebates and departures from published tariffs, and (4) proceedings concerning the enforcement of the orders of the commission with regard to accounts, the movement of traffic and the providing of facilities. The new court was to be composed of five judges designated by the Chief Justice of the Supreme Court from among the circuit judges of the United States, each to serve for five years, except that in the first instance the court was to consist of five additional circuit judges whom the President should appoint and who should serve one, two, three, four and five years, respectively, as the President should designate. It was stipulated that after 1914 no judge should be reappointed to the court until the expiration of at least one year after the conclusion of a previous term of service. It was hoped that the new court would not only bring about more expeditious action in the suits it was authorized to try, but that it would conduce to a greater degree of specialization in its field of jurisdiction. In theory, at least, the court was a highly desirable addition to the machinery for Federal railway regulation. Unfortunately, the court, as originally constituted, met with general disfavor, and in October 1913 it was abolished and its duties assigned to the Federal district courts.

While the three features of the Mann-Elkins law just

described constituted the chief modifications of the Interstate Commerce Act set forth in that law, several other provisions of minor significance were included. Among the more important of these were the following: (1) the law was made to apply to telegraph and telephone companies; (2) the commission was authorized to fix maximum rates, after hearings held upon its own motion, as well as after hearings held upon complaint; (3) the commission was given the power to establish and enforce the reasonable classification of freight; (4) it was provided that upon written request to its agent a carrier must, upon penalty of fine, give, within a reasonable time, a written statement of the rate applicable to a described shipment between stated points; (5) the shipper was given the right to designate the through route over which his property should be transported; (6) each carrier subject to the provisions of the law was required to designate in writing an agent in Washington, upon whom could be served all notices and orders of the commission; (7) it was provided that all cases and proceedings which formerly would have been brought by or against the Interstate Commerce Commission should be brought by or against the United States. The conduct of the prosecution or defense of the commission's cause in suits involving appeals from the commission's orders thus became the duty of the Department of Justice. Provision was made for the employment of special counsel by the Department of Justice, and the commission and other interested parties were given the right to intervene in all cases; (8) the President was authorized to appoint a commission to investigate questions pertaining to the issuance of stocks and bonds by railroad corporations. The report of this commission, known as the Hadley Commission, from its chairman, Arthur T. Hadley, President of Yale University, was briefly discussed in Chapter VIII.

Between 1910 and 1915 Congress has made several amend-

ments to the Interstate Commerce Act. In the Panama Canal Act of August 24, 1912, it was made unlawful, after July 1, 1914, for any railroad company or other common carrier subject to the act to own, lease, operate, control or have any interest in common carriers by water or any vessel carrying freight or passengers, operating through the Panama Canal or elsewhere "with which said railroad or other carrier aforesaid does or may compete for traffic." Jurisdiction was conferred upon the Interstate Commerce Commission to determine questions of fact as to the competition or the possibility of competition, and its decision in all cases was to be final. The commission was authorized to permit the continuance of railroad ownership of competing vessel lines, operated elsewhere than through the Panama Canal, if it should be of the opinion that the service was being operated in the interest of the public and that the continuance of ownership would not prevent or reduce competition on the water route under consideration. Several orders have been made by the commission under the amendment, the most important one being that requiring the leading eastern trunk line railroads to dispose of their vessel lines on the Great Lakes.

By the act of August 24, 1912, the commission was also given authority to require the connection of rail and water carriers, where such connection would be reasonably practicable; to establish through routes and maximum joint rates over rail and water lines; to establish maximum proportional railroad rates to and from ports; and to order any railway, entering into arrangements with a carrier by water operating from any port in the United States for handling through business between an interior point in the United States and a foreign country, to enter into similar arrangements with any or all other steamship lines operating from that port to the same foreign country. It was hoped by these provisions to make it impossible for the rail-

ways to prevent, by discriminatory practices, the development and growth of water transportation.

On March 1, 1913, a new section, Number 19a, was added to the Interstate Commerce Act requiring the Interstate Commerce Commission to ascertain and report the value of all the property owned or used by all common carriers subject to the law. The commission was directed to make a classified inventory of all the physical property of the carriers; to ascertain the original cost, the cost of reproduction new, and the cost of reproduction less depreciation of each piece of property; to report in detail the original cost and present value of all real property; to investigate and report upon the history and organization of the present or any previous corporations operating the property, giving a full statement of their stock and bond issues, of the financial arrangements by which the securities were marketed, and of the earnings and expenditures; to ascertain the amount and value of all grants and donations received by the carriers from all sources and the amount of money received by the carriers from the sale of land grants made by the United States or by any State, county, or municipal government. The carriers were directed to furnish the commission with all maps, documents and papers necessary for the work of valuation and to give to the agents of the commission free access to all their property. It was also provided that after the completion of the initial valuations the commission should keep itself informed of all extensions, improvements and other changes of the property of the carriers and should from time to time revise and correct its valuations. The World War caused a partial suspension of the work of valuation, and so far the commission has reported a tentative valuation of only a few roads. When the valuation is completed the results should be of great value to railway commissioners and courts in solving many of the problems of railway regulation. Questions concerning capitalization,

taxation, rates, and accounting practices can be much more readily determined by the use of the results which the valuation of the railways will disclose.

The foregoing paragraphs describe the chief provisions of the Interstate Commerce Act as it stood at the end of 1914. In addition to this important law several other statutes enacted by Congress applied directly to the railroad business. Some of these acts concerned the railways merely because the laws were of general application to corporations engaged in interstate commerce, others contained provisions having direct reference to the management of the railways, and others had for their purpose the regulation of certain phases of railway operation and of the relations between the railroad companies and their employees.

The Sherman Antitrust law of July 2, 1890, which declares illegal "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations" was held to apply to railroads, and, under the terms of the law, a number of railway combinations were dissolved by the Federal courts. By the Clayton Antitrust Act of October 15, 1914, all corporations "engaged in commerce" were forbidden to

> acquire, directly or indirectly, the whole or any part of the stock or other share capital of another corporation engaged also in commerce, where the effect of such acquisition may be to substantially lessen competition between the corporation whose stock is so acquired and the corporation making the acquisition, or to restrain such commerce in any section or community, or tend to create a monopoly of any line of commerce.

It was provided, however, that the law should not apply to corporations purchasing such stock solely for investment, and that it should not be construed to prohibit carriers from

purchasing or aiding in the construction of short branch lines or feeders, or to prevent them from extending any of their lines through stock acquisition in cases where there was no substantial competition between the purchasing and the selling companies. Common carriers were also forbidden, after two years from the approval of the act, to have any dealings in securities, supplies or other articles, or to have any contracts for construction or maintenance,

> to the amount of more than $50,000, in the aggregate, in any one year, with another corporation, firm, partnership, or association when the said common carrier shall have upon its board of directors, or as its president, manager, or as its purchasing or selling officer, or agent in the particular transaction, any person who is at the same time a director, manager, or purchasing or selling officer of, or who has any substantial interest in, such other corporation, firm, partnership or association,

unless the transaction should take place as the result of competitive bidding under regulations to be prescribed by the Interstate Commerce Commission. This provision was designed to overcome the practice which many railway managers had indulged in of selling to, or buying from, their railway company, at very remunerative prices, securities and supplies of various kinds. Some of the railways in the United States have been wrecked by such unscrupulous action by their directors and chief officers. The operation of this clause was postponed from time to time as the date for its becoming effective drew near, but in 1921 President Wilson vetoed a bill for further postponement, and the clause went into effect. The authority to enforce compliance with the sections of the Clayton law applying to common carriers is vested in the Interstate Commerce Commission.

For the regulation of the operation of railways, in order to secure a greater degree of safety both for the public and

for railway employees, Congress has passed a number of salutary measures. The use of automatic couplers and continuous power brakes was made compulsory by the Safety Appliance Acts, the first of which was passed in 1893; locomotive ash-pans which can be emptied and cleaned without the necessity of the employee going under the locomotive are required by a law passed in 1908; an act, approved March 4, 1907, forbids carriers to permit their employees, under ordinary conditions, to be on continuous duty for more than 16 hours and otherwise regulates hours of service, and a Federal Employers' Liability law applicable to interstate carriers has also been passed. Locomotive boilers are inspected by Federal agents and the transportation of explosives is also regulated by law. Railway companies are required to make a monthly report to the Interstate Commerce Commission of all accidents occurring on their lines which result in injury to person, roadbed, or equipment, and the commission is authorized to investigate all accidents and, if it thinks proper, make a public report concerning them.

Another highly important Federal law concerning railways was the Erdman Act of 1898 (amended in 1913 by the Newlands Act), which was designed to prevent railway strikes by providing for the arbitration of controversies between railway companies and their employees. The law provided for a Federal Commissioner of Mediation and Conciliation, to be named by the President with the consent of the Senate. In case of a threatened strike by railway employees, it was the duty of this official, together with two other Government officials, designated by the President, to endeavor to bring the disputing parties together and arrange for an amicable settlement of their differences. If the efforts of this Board of Mediation and Conciliation failed, it endeavored to induce the parties in dispute to agree to an arbitration of their differences by

a regularly appointed board of arbitrators. This law was used successfully on several occasions to avert threatened railroad strikes.

The Federal railroad laws enacted between 1903 and 1914 represented a great advance over the initial attempts at regulation under the statute of 1887. The Interstate Commerce Commission brought about the establishment of reasonable rates in many instances, and it corrected a very large number of unfair discriminations in published rates. Obscure methods of granting rebates and other forms of preferential treatment were occasionally discovered, but they were promptly dealt with and the offenders punished. By the abolition of the free pass and similar favors the railroads were deprived of a large measure of their power to exercise undue influence on government officials and other individuals with political power. Publicity of accounting revealed to the public and to stockholders the various operations of railway managers.

While the system of railroad regulation devised between 1903 and 1910 was productive of much good, it had certain results which were of doubtful benefit, and certain results which were actually harmful to the transportation business of the country. Several weaknesses in the methods of regulation developed during the seven years following 1910. The increased activity of the States in regulating railroads served to emphasize more strongly the problems involved in the dual system of control by State and Federal authority. The failure of Congress to permit the railroads openly to coöperate with one another in making rates helped to keep alive a competition in service which in many instances reduced the efficiency of the transportation agencies. The lack of uniform regulation of the financial operations of railroad corporations left the way open for unscrupulous railroad financiers to undermine the financial strength of prosperous companies. Prob-

ably the chief weakness of the entire system of regulation was that its chief result was to create an administrative machinery which functioned with effectiveness and despatch only to reduce rates or to prevent rates from being advanced. It did not seem to occur to Congress or to State legislatures that it would ever be necessary for the railroads to increase their charges and increase them quickly. Virtually all railroad statutes, State and Federal, were of a restrictive character; no laws were passed with the purpose of extending aid to the carriers in time of emergency.

It was thought in 1910, after the Mann-Elkins law was enacted, that the railroad problem of the United States was finally "solved." Yet five years later there was almost universal dissatisfaction with the conditions of the railroad business. Railroad managers were complaining of inadequate revenues, shippers were protesting against inferior and insufficient service, railroad labor was threatening to strike for higher wages and shorter hours of work, investors in railroad securities, fearful for the safety of existing investments, refused to supply the capital needed for railroad expansion. There was a widespread demand for a radical modification of the railroad policy of the Government. Before legislation of a constructive nature could be framed and enacted the United States entered the World War. In less than a year after the declaration of war the whole system of private operation and government regulation was discarded, and the Government assumed the burden of operating the railroads. It was not until after the war ended that a new program of railroad control could be adopted.

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CHAPTER XXVIII

NEW RAILROAD PROBLEMS; GOVERNMENT OPERATION

Decline of earnings, 489. Railroad bankruptcies, 492. The Adamson Act, 494. Effects of the war, 496. Government control, 504. The Railroad Administration, 505. Operating results, 509. Financial results, 510. References, 511.

THE principal cause of the railroad difficulties following 1910 was the steady advance in the costs of railroad operation without a proportionate increase in railroad earnings. The reason for the increase of operating costs was the general rise in prices, which began about 1897 and did not end until 1920. All the supplies and equipment used by railroads—fuel, lumber, steel, rolling stock, electric equipment —advanced in price with other commodities, and the rising cost of living throughout the United States made it necessary for railroad corporations to raise the wages of their employees. Unfortunately the gross receipts of the carriers did not expand rapidly enough to yield favorable net revenues. This was due in part to the comparatively slow growth of railway traffic during the four years following 1910 and in part to the failure of Federal and State regulating authorities to permit the carriers to put into effect any substantial increase of freight rates.

In 1910 the railroads in Official Classification territory and the roads in Western Trunk Line territory endeavored to obtain a 10 per cent advance in freight rates, but the Interstate Commerce Commission prevented the proposed increases from taking effect. In justification of the Commission's decision it may be said that the year 1910 was on the whole a highly prosperous year for the carriers. Traffic was unusually heavy and the average net operating revenue per mile of line of all railroads, amounting to $3,895, was considerably higher than for any previous year.

In 1911 the volume of railroad traffic was not so large as in 1910, and as a result the net revenues of the railroads were almost $100,000,000 less. In 1912 there was a partial recovery of railroad traffic but a further increase of operating expenses. The enginemen of 52 eastern railroads demanded an increase of wages. A threatened strike was averted by an arbitration agreement. While the arbitrators did not give the enginemen all they demanded they recognized the justice of their claim for additional compensation and awarded them a substantial increase. The firemen and trainmen of the eastern railroads likewise demanded more pay, and in 1913, arbitration boards rendered decisions in favor of both groups of workmen, the award to the firemen being published in April and that to the trainmen in November.

The financial burdens of the eastern railroads were made heavier not only by the large expenditures for labor and supplies, but also by the heavy fixed charges. Huge sums of money were expended by virtually all the larger eastern roads in constructing improved terminal facilities, and in many instances the improvements were of a kind that yielded little or no additional revenue. The costly passenger terminals built in New York by the Pennsylvania and the New York Central added greatly to the financial obligations of both systems, and increased their earning power but slightly. The entire railroad system of the country showed declining net revenues in 1912, and the showing of the roads in Official Classification territory was particularly unfavorable.

In May, 1913, the eastern lines filed tariffs with the Interstate Commerce Commission providing for a general increase in freight rates, the increases varying from 3 to 50 per cent on different articles, and averaging about 5 per cent. The Commission suspended the new schedule and undertook an investigation as to the reasonableness of the

proposed changes. A formal decision was not reached until late in July, 1914. While conceding that there was "a tendency toward a diminishing operating income" the Commission refused to grant all the changes which the carriers desired. It allowed a 5 per cent advance of class rates and of commodity rates to the roads in Central Freight Association territory, but it did not permit any rate advances in Trunk Line and New England territories. It suggested several ways, however, in which the carriers in these districts might secure additional revenue without increasing freight rates. The Commission's decision was based largely upon the statistical returns for the fiscal year ending June 30, 1913. There had been a considerable increase in the volume of traffic during that year and though operating costs had advanced somewhat, net operating revenues were greater than they had been in the preceding year.

Before the Commission rendered its decision there had been a decided turn for the worse in the railroad business. The fiscal year of 1914 showed a freight traffic less by sixty million tons than had been carried the previous year. The increased rates of wages to train service employees, allowed by the arbitration boards in 1913, and higher costs of railroad supplies were reflected in augmented costs of operation. The operating ratio for 1914 was 72.22 as compared with 65.44 for the preceding fiscal year. The carriers petitioned that the 5 per cent rate case be reopened for further consideration. The petition received favorable action, and in December the Commission granted the application for rate increases which had been denied in July. It was estimated that the new rates would add approximately $50,000,000 to the annual gross revenues of the eastern roads.

In 1915 the railroads made a slightly better showing than in 1914, the operating ratio receding to 70.52. However, the outlook in the transportation business as a whole was

anything but promising. A number of the weaker roads, unable to withstand longer the adverse conditions against which they had been struggling since 1910, went into bankruptcy. At the same time several large systems which had once been highly prosperous, were forced into receivership because of financial mismanagement. The Rock Island and the Frisco systems, and several of the overcapitalized railroads of the Gould system in the Southwest collapsed under their burden of excessive fixed charges. The Wabash, impoverished by its expensive venture of constructing a terminal in Pittsburgh, likewise became bankrupt. The once prosperous New Haven system, its liabilities increased from $93,000,000 in 1903 to $417,000,000 in 1913, disintegrated, bankruptcy overtaking a number of its constituent lines, and a receivership for the main system being narrowly averted. By October 1, 1915, nearly 42,000 miles of railroad, one-sixth of the railway net of the United States, representing a capitalization of $2,250,000,000, had passed into the control of the courts for operation by receivers.

The credit of the railroads was so impaired that it was impossible for them to obtain the funds needed for extensions and improvements. Railroad construction came to a complete stop and all thought of carrying out projects for the improvement of railway facilities was for the time being abandoned. President Wilson, in his annual message to Congress in December, 1915, called attention to the plight of the railroads, and suggested that Congress create a commission "to ascertain, by a thorough canvass of the whole question, whether our laws, as at present framed and administered, are as serviceable as they might be in the solution of the problem." In answer to this suggestion Congress appointed an investigating commission to undertake a study of the entire railroad question. The commission held a series of hearings, but before it could formulate a

program of action, the war brought about such changes in the railroad situation that it abandoned its work, not even making a report.

The fiscal year of 1916 witnessed a temporary change for the better. The war in Europe stimulated great industrial activity in the United States, and the traffic of the railroads increased enormously in volume. The rapid rise in prices, which came as a result of the war, did not begin until the latter part of 1916, and as a result the financial reports of the carriers were exceptionally favorable. The operating ratio for the year ending June 30, 1916, dropped to 65.44, and the revenue both gross and net, was larger than it had been in any previous year.

The change, however, was only temporary. While the volume of traffic and the amount of gross revenue continued to grow, operating costs began to mount with much greater rapidity. The four great railroad labor organizations, locomotive engineers, engineers and firemen, railway conductors, and railway trainmen demanded of the carriers a "basic" eight-hour day instead of the ten-hour day previously in effect, and overtime pay at the rate of time and a half. Since the hours of train service could not easily be shortened the demand of the unions was merely a demand for a large increase in pay. Conferences between representatives of the employers and of the employees failing to result in any agreement, the railroad managers offered to submit the controversy to arbitration. The union leaders refused to accept this proposal and insisted that their demands be granted. President Wilson invited the opposing factions to a conference at Washington, and as a solution of the difficulty he proposed that the eight-hour day be adopted with *pro rata* pay for overtime, offering to have a commission appointed to study the results of the change and make suggestions for whatever measures of financial relief might be found necessary to enable the carriers to

meet the added cost. The union leaders signified their willingness to accept the President's proposals. The railroad managers refused, and the union leaders promptly called a country-wide railroad strike for September 4.

President Wilson went before Congress on August 29, and recommended that a law be enacted providing for the eight-hour day for train-service employees. He also advised that the Interstate Commerce Commission be enlarged, that a commission be established to study the effects of the eight-hour law, and that a measure be enacted prohibiting railroad strikes until after an official investigation of matters in controversy could be held. On September 2, Congress hastily enacted the Adamson Eight-Hour Act. This law provided that the eight-hour day should become effective on January 1, 1917, and created an investigating commission. The other recommendations of the President were disregarded.

The railroad managers, asserting that the Adamson Act was unconstitutional, sought injunctions in the Federal courts to prevent the enforcement of the law. On November 22, Judge Hook of the United States District Court at Kansas City declared the law unconstitutional, in order to hasten a final consideration of the matter by the Supreme Court. Argument before the Supreme Court took place on January 8, 1917, the railroad managers having entered into an agreement with the Attorney General to continue the ten-hour basic day, but to give the men back pay due from January 1 if the law should be upheld. The labor union leaders refused to wait for the decision of the Supreme Court. On March 15 they called a strike for March 17, later however postponing action until March 19. On the morning of the 19th, chiefly because of the threatening state of the international relations of the United States, the railroad managers decided to yield. They signified their acceptance of the terms of the Adamson law, and

the strike was averted. On the afternoon of the same day the Supreme Court handed down its decision on the Eight-Hour Law, reversing Judge Hook's decision, and declaring the act constitutional.

Meanwhile the railroad problem had been further complicated by operating difficulties. The war in Europe caused a greatly enlarged foreign demand for American foodstuffs, munitions, and various military supplies. The great increase in railroad traffic in 1916 had been caused partly by the increased export trade. Unfortunately little effort was made to coördinate the railroad facilities of the country and the facilities for ocean transportation. The railroads reaching the interior of the United States accepted larger and larger quantities of export traffic billed to eastern seaports. The activity of the German submarines reduced the tonnage of ships available for transatlantic traffic, and the fact that the nations allied against Germany found it necessary to use a large amount of tonnage in European transport service still further limited the shipping services between America and Europe. Inadequate shipping caused the terminals of eastern railroads to become congested with cars loaded with traffic destined for Europe. When the terminals at the seaports became overcrowded with cars, the terminals farther inland were used for storage purposes until in the winter of 1916-17 virtually every railroad terminal east of the Mississippi River was congested. Under these conditions the operation of the railroads became exceedingly difficult. It became necessary for many lines to embargo all traffic except food and a few other necessities of life, and even these necessities could be moved only with great difficulty. A great many of the loaded cars in the eastern terminals belonged to western roads. As the accumulation of cars grew in the east the number of cars available for use on western roads steadily declined. Even when western cars were unloaded in the east, the eastern

lines did not return them, finding it to their advantage to retain them for local service. The failure of the eastern lines to return promptly the empty cars belonging to their western connections was a direct violation of the car service rules of the American Railway Association. In an endeavor to relieve the situation the association established a Commission on Car Service at Washington in December, 1916. This Commission was authorized to obtain weekly reports of the car situation and issue orders with regard to the return of cars. Even this drastic step did not result in much improvement, as some of the roads failed to carry out the orders of the Car Service Commission.

Meanwhile the Interstate Commerce Commission had been investigating the problem of car service. In January, 1917, it issued a report on car supply and methods of car distribution, and prescribed a new code of car service rules for the carriers to follow. There was some doubt as to whether the Interstate Commerce Commission had statutory authority to issue orders with respect to car service, but the order had the effect of stimulating the carriers to greater activity. The Car Service Commission was reorganized and the carriers agreed to abide by the rules which it should prescribe. The Interstate Commerce Commission then postponed the effective date of its order, and took steps to coöperate with the carriers in making their self-imposed regulations effective. Late in May Congress removed all doubt as to the power of the Interstate Commerce Commission to regulate car service by passing the Esch bill, which expressly conferred upon the Commission the necessary authority.

When war was declared on April 6, 1917, the railroad managers immediately took steps to operate the railroads in such a way as to meet the needs of the Government. In the Army Appropriation Act of August 29, 1916, a provision had been included for the creation of a Council of Na-

tional Defense, consisting of six cabinet officers; and the President had been authorized to appoint an Advisory Commission consisting of not more than seven persons, who should be specially qualified to assist in mobilizing the economic resources of the country for national defense in case of war. President Wilson chose as the transportation expert of the Advisory Commission Mr. Daniel Willard, the president of the Baltimore and Ohio Railroad. At Mr. Willard's suggestion the American Railway Association on February 16, 1917, created a special Committee on National Defense, consisting of eighteen railway officials from various parts of the United States. This special committee met in conference with the Secretary of War and other War Department officers on March 1, and drew up plans for the coöperation of the railroads with the military forces of the Government.

Immediately after war was declared the Council of National Defense requested Mr. Willard to "call upon the railroads to so organize their business as to lead to the greatest expedition in the movement of freight." Mr. Willard thereupon called for a general conference of railway executives at Washington. Nearly 700 railway presidents, representing virtually all the railways of the United States, assembled at Washington on April 11, and signed the following resolution:

Resolved: That the railroads of the United States, acting through their chief executive officers here and now assembled, and stirred by a high sense of their opportunity to be of the greatest service to their country in the present national crisis, do hereby pledge themselves with the Government of the United States, with the Governments of the several States, and with one another, that during the present war they will coördinate their operations in a continental railway system, merging during such period all their merely individual and competitive activities in the effort to produce a maximum of national transportation efficiency. To this end they hereby agree to create an organization which shall have general authority to formu-

late in detail and from time to time a policy of operation of all or any of the railways, which policy, when and as announced by such temporary organization, shall be accepted and earnestly made effective by the several managements of the individual railroad companies here represented.

To carry out the plan for a "continental railway system" the Special Committee on National Defense of the American Railway Association was enlarged to thirty-three members. An executive committee of five, known as the Railroads' War Board, was selected from this committee. The War Board established headquarters at Washington and undertook, with the help of several subcommittees, to bring about a better coördination of the railroad service.

The Railroads' War Board made an earnest effort to improve the railroad service, and in view of the obstacles against which it was forced to struggle, it achieved an amazing degree of success. Without legal authority to compel coöperation, it called upon the individual carriers for voluntary action. It organized car pools for the more equitable distribution and more rapid movement of cars; it carried on an intensive educational campaign to induce shippers and consignees to load and unload cars with greater promptness; it encouraged economy and efficiency by suggesting the elimination of duplicate passenger train service, the heavier loading of freight cars, and the curtailment of all special services. For the most part the suggestions of the War Board were readily complied with, and traffic statistics of 1917 showed a steadily increasing efficiency of the railroad service.

Notwithstanding this increasing efficiency, the conditions of railroad transportation in the fall of 1917 did not appear greatly better than in the preceding fall, and the coming of the winter season with its difficulties of operation was looked forward to with no little apprehension. Though the carriers were handling a larger and larger volume of

traffic, the amount of tonnage offered for transportation grew at a more rapid rate than the amount of tonnage carried. The military operations of the Government—the construction of camps and the concentration of troops and supplies—caused the business of the railroads to expand enormously. While the war traffic was growing, little or no effort was made to curtail the volume of ordinary industrial traffic, and as time went on the burden of the roads became constantly heavier.

One reason for the inability of the carriers to cope with the situation was the lack of sufficient equipment. The shortage of traffic and the shortage of revenues in the years since 1910 had been reflected in diminished purchases of cars and locomotives, so that when the great volume of shipments poured in during 1916 and 1917 there was not enough rolling stock to meet the needs of the country. The railroads were also adversely affected by the labor situation. The struggle over the eight-hour law had served to promote discord between managers and employees, and they did not work together as harmoniously as would have been possible under other conditions. Moreover, many railroad employees began to leave the railroad service, some to enter the army and others to accept better paying employment in munition plants, steel mills, shipyards and other factories. The workmen who remained with the carriers, faced with a greatly increased cost of living which came with the steady rise of prices throughout 1917, began to demand another large increase of wages.

Meanwhile the railroads had failed again to secure any substantial increase in freight rates. The eight-hour law and the rising prices of fuel and other supplies caused the cost of operation to mount more rapidly than ever, and in the early months of 1917, notwithstanding the increasing volume of traffic, there was a sharp decline in net revenue. In the eastern district in particular, where the effect of ris-

ing prices of coal and other materials was first felt, and where, because of the large number of employees, the burden imposed by the Adamson Act was greatest, the railroads suffered heavy losses. In March and April all the railroads of the country appealed to the Interstate Commerce Commission for permission to make a general advance of 15 per cent in their freight charges. In a decision handed down on June 27 the Commission permitted a small increase of class rates and a small increase in certain commodity rates in eastern territory. The applications of the southern and western carriers were denied, except for slight increases in rates on coal, coke, and iron ore. Again the Commission based its judgment upon the statistical reports of previous months, and particularly of the prosperous year of 1916, and refused to permit its decision to be influenced by tendencies, which it could not say with certainty would continue. An analysis of the official statistics employed by the Commission in reaching its decision showed that the financial condition of the railroads was by no means alarming, certainly not so alarming as the carriers endeavored to make out. But there was a widespread belief that the Commission should have treated the carriers more generously and that it should have made greater allowance for the probabilities of the future. The financial conditions of the railroads became steadily worse, just at the time there was need of greatest strength. By the end of 1917 the costs of operation were so high that much more than a 15 per cent increase of rates was needed to avert impending deficits on many railroad systems.

Another difficulty which the Railroads' War Board met with, in addition to insufficient equipment and inadequate revenues, was the matter of securing complete coöperation among the various railroad systems. Notwithstanding the resolution signed by the railroad officials on April 11, the railroads were not "coördinated in a continental railway

system," and the "many individual and competitive activities" of the various lines were not "merged." The railroads of the United States had been developed under a system of competition, and the managers could not in an instant, by mere resolution, sacrifice the competitive advantages which they had obtained in the struggles of the past. Coördination was particularly difficult in view of the financial position of the roads. Each carrier was under the strongest compulsion to use whatever strategic advantage it possessed solely for its own benefit. Each road held fast to its own terminal facilities; there was not always a scrupulous obedience of the orders of the War Board with respect to car service; many roads declined to carry out plans for the elimination of duplicate services because of the fear of lost patronage; many lines accepted traffic for shipment, when there was much doubt of their ability to carry it to destination, merely because they did not care to abandon any business to rival lines. The chief excuse given for the failure of the carriers to unify their operations to a greater degree was that they were forbidden to do so by the Sherman Antitrust Law and the Interstate Commerce Law. As a matter of fact neither of these laws forbade the common use of the physical facilities of railways, though they forbade the financial coöperation, which, in ordinary times, would have been necessary for the adoption of a comprehensive plan of operating unity.

Still another obstacle to the efficient operation of the railroads was the diversified system of governmental control which came into existence during the early stages of the war. By an act passed August 29, 1916, the railroads were required, upon the demand of the President, to give preference in transportation to troops and military supplies. Under authority of this law officials of the Army, the Navy and the United States Shipping Board gave to the carriers large numbers of priority orders. Agents of

the Food and the Fuel Administrations likewise ordered preference to be given to shipments of food and fuel. The Interstate Commerce Commission was authorized to control car service. On August 10, 1917, Congress enacted a Priority Law, under the terms of which the President was empowered during the continuation of the war, to direct all carriers, both rail and water, to give preference in transportation to such traffic as in the President's judgment was essential to national defense. On August 29 a law was passed enlarging the membership of the Interstate Commerce Commission from seven to nine. While all the provisions for expediting the movement of freight were admirable in purpose, they served to produce confusion and disorganization, because there was little coördination among the different regulating authorities. The railroads protested against the multitude of priority orders emanating from so many different sources. After the appointment of Judge Robert S. Lovett, Chairman of the Executive Committee of the Union Pacific Railroad, as Director of Priority Shipments on August 18, there was a distinct change for the better in the issuing of priority orders, and it became possible to secure the expeditious movement of essential traffic, to the exclusion of traffic of less importance.

Notwithstanding the efforts of Judge Lovett and the War Board, the railroads became more and more congested. Late in November the carriers in the eastern district took the drastic step of pooling "all available facilities on all railroads east of Chicago . . . to the extent necessary to furnish maximum freight movement." An operating committee was appointed, with headquarters at Pittsburgh, to direct the operation of the pooled lines. All export shipment of steel products, except those intended for the use of the United States Government, was ordered to be diverted from the Pittsburgh gateway; all other freight which ordinarily passed through Pittsburgh was

ordered to be diverted to other lines North and South; the Pennsylvania's finest train, the "Broadway Limited," was discontinued; all "fast" freight service was suspended; and the use of open top cars for the team track loading of coal was discontinued. Had this step toward operating unity been taken several months sooner, it is probable that the private operation of railroads would have been continued. Unfortunately it had not been possible to obtain such action earlier through the voluntary coöperation of the eastern lines.

By December it had become apparent that the railroad problem was approaching a crisis, and that radical action was necessary to prevent the transportation system from breaking down. The problem, for the time being at least, was entirely a problem of operation. Time did not permit a great increase in the facilities of the carriers; it was necessary to operate existing facilities with a greater degree of efficiency. Only a complete unification of the railroads in the congested districts could save the situation. On December 1, the Interstate Commerce Commission, in a special report to Congress, reviewed the railroad situation, and recommended that (1) the President assume control of the railroads and operate them for the duration of the war, or that (2) whatever legal obstacles prevented unified operation by the carriers themselves be immediately removed, and that the Government give the roads any needed financial assistance. Commissioner McChord, in a separate statement, asserted that even with the suspension of all antitrust legislation, voluntary coöperation among the carriers could not be achieved because of their long-standing competitive differences. He recommended that the Government take direct charge of the railroads and accomplish by compulsory methods the necessary unification of operating facilities.

The policy of complete government control had been

followed both in Germany and Great Britain since the beginning of the war. In Germany the lines owned and operated by the various states of the Empire had been taken over by the Imperial Government and operated as a single system. In Great Britain, the railroads, privately owned as in the United States, had at the beginning of the war, passed at once under the control of the Government, in accordance with the terms of a law enacted in 1871.

In the Army Appropriation Act of August, 1916, Congress had authorized the President in time of war, through the Secretary of War, to take possession and assume control of the transportation system of the United States and operate it, to the exclusion of other traffic, for the transfer of troops, war material and other equipment. Acting under the authority of this law, President Wilson, on December 26, 1917, issued a proclamation providing for his assumption of control of the steam railroads of the United States at twelve o'clock noon, December 28. He named William G. McAdoo, the Secretary of the Treasury, as Director General of Railroads. The President had decided that the unification of railway facilities could be obtained only through the operation of the railroads directly by the Government.

Mr. McAdoo, for the time being, retained intact the operating organization of the individual railroads. He created a central administrative system at Washington, and took immediate steps to weld the many lines of the country into one great system, employing their facilities in a manner which produced a maximum of transportation service, without regard to the welfare of the single roads. He soon divided the country into three great operating districts or regions, placing an experienced and competent railway official in charge of each region. Gradually the entire system of administration was changed. The various railway presidents were relieved entirely of their duties as

the operating heads of the railroads, and "Federal Managers" appointed in their place. Some of the Federal Managers were chosen from among the railway presidents, in which case they were required to surrender their positions with the railroad corporations and become solely officials of the Railroad Administration. The presidents who retained their connection with their corporations gave up all their duties and responsibilities of operation. A Federal Manager was frequently given supervision over lines or parts of lines which previously had had no financial or operating relations with one another. The identity of individual lines was disregarded.

The system of administration finally worked out consisted of two parts. At Washington there was a central staff organization having general supervision of all branches of the railway service. This organization was made up as follows:

Director General of Railroads.
Division of Public Service and Accounting.
Division of Law.
Division of Finance and Purchases.
Division of Capital Expenditures.
Division of Operation.
Division of Traffic.
Division of Labor.
Division of Inland Waterways.

Each division was in charge of a director, who was assisted by a staff of experts. The operating organization was made up of seven regional administrations, the regions being the Eastern, the Allegheny, the Pocahontas, the Southern, the Northwestern, the Central Western and the Southwestern. Each region was in charge of a Regional Director to whom the Federal Managers were responsible. The operating organization below the Federal Managers was very much the same as it had been before Federal control.

Not all the railroads of the country were subjected to Federal control. Some of the "short lines" were not taken over by the Railroad Administration, and some which were taken over at the beginning were released before July 1, 1918. Virtually all the Class I roads were operated by the Government, however, and a number of the smaller systems. The Pullman car service also passed under Government control. The express companies were required to consolidate into a single company, and in November, 1918, the operation of this company was likewise assumed by the Government.

While the action of the President in assuming control of the railroads was taken by virtue of the act of August 29, 1916, it was necessary to enact further legislation to deal with the problems which immediately arose. On March 21, 1918, a Railroad Control Act was passed. This law guaranteed to each railroad corporation, whose lines were taken over, an annual payment not exceeding its average net operating income for the three years ending June 30, 1917, it being stipulated that the President should make an agreement with each company to determine the exact amount of compensation payable. It was provided that in cases where agreements could not be arranged the problem of just compensation should be submitted to boards of referees, and if a decision acceptable to a carrier could not be reached it should have the right of appeal to the Court of Claims. It was stipulated that the Government should provide for all maintenance, repairs and renewals, that the property of each carrier should be returned "in substantially as good repair and in substantially as complete equipment as it was at the beginning of the Federal control," and that the United States should be reimbursed for all additions and betterments not justly chargeable to the Government. A revolving fund of $500,000,000 was created to pay the expenses of Federal control and to finance the

operation of the roads. The President was authorized to initiate all charges, classifications, regulations and practices, by filing them with the Interstate Commerce Commission. The Commission was deprived of its powers of suspension, but it retained the power to investigate the reasonableness of all rates and regulations and make such orders as it was authorized to make by the Interstate Commerce Act. A final provision of the law was that the roads should be returned to their owners within one year and nine months following the ratification of the treaty of peace.

The Railroad Administration made a number of important changes for the purpose of bringing about a greater degree of operating unity in the railroad system. Perhaps the most important innovation was the joint use of terminals, equipment, repair shops, and other physical facilities owned by the separate lines. An arbitrary control of the routing and distribution of traffic relieved the congestion on crowded roads, and obtained more service from the lines that had not been operated to full capacity. A greater effort was put forth to control traffic at the source, shipments being accepted only when official permits showed there was no obstacle in the way of prompt delivery at destination. The elimination of duplicate passenger services did much to conserve motive power and labor, and if passenger trains were more crowded and the service not so speedy, the public made but little complaint. Consolidated time tables of passenger trains and consolidated ticket offices were measures of economy, which also afforded conveniences not available under competitive methods of operation. The Railroad Administration purchased a considerable number of new locomotives and freight cars. By adhering to more nearly standardized equipment and by introducing standardization into repair work, the Government saved money and secured faster production than would otherwise have been possible.

In dealing with labor the Railroad Administration adopted the principle of collective bargaining with all classes of employees, whereas under private operation the railroad companies had dealt collectively only with a few groups. When government operation began, the wages of railroad employees were considerably lower than the wages paid in other lines of industry, a condition which was causing the daily loss of both skilled and unskilled workmen. One of the first acts of the Railroad Administration was to appoint a non-partisan Railway Wage Commission, the workmen receiving assurance that whatever increase the Commission granted should be effective as from January 1, 1918. On the basis of the Commission's report the Director General issued an order in May, providing for a substantial increase in the wages of all classes of employees. Subsequently a Board of Railroad Wages and Working Conditions was created, consisting of three representatives of railroad labor and three representatives of railroad managements. This Board considered the special claims of individual classes of railroad employees and made recommendations upon the basis of which other wage increases were ordered. Three bipartisan boards of adjustment were created to settle controversies which could not be settled by the workmen and the local managements. The eight-hour day was established throughout the railroad service. While the Railroad Administration dealt with railroad labor organizations, it did not discriminate between those workmen who belonged to labor unions and those who did not. The last increase in wages, made by the Railroad Administration, came early in 1919. By that time the wages of railroad labor had been raised to the general level of wages in other lines of industry, though there were some industries in which wages were lower than in the railroad service and others in which wages were higher. One feature of the labor policy of the Railroad Adminis-

tration which was much criticized was that wages were standardized throughout the United States. The standardization was the cause of excessive increases of pay in the case of many individual employees; while wide variations in the cost of living throughout the country produced great inequality in real wages.

Higher wages and higher costs of fuel and equipment necessitated increased revenues. On May 25, 1918, the Director-General issued an order providing for a 25 per cent increase in all class rates on freight traffic, an increase of approximately 25 per cent in all commodity rates, and an increase of passenger fares to three cents a mile. Commutation fares were advanced 10 per cent and Pullman fares were also made higher. Higher minimum charges on less than carload and on carload freight shipments were established, export and import rates were temporarily cancelled, and various other changes made in rates and fares with the purpose of increasing the income of the railroads. Intrastate charges and interstate charges were treated as a whole and all advanced in a uniform manner. Numerous protests were made against the advanced rate order, not so much because of the increased charges as because of the disturbance of long-standing rate relationships. The Railroad Administration recognized the desirability of maintaining intact, as nearly as possible, the rate structures which had been brought into effect in the course of the industrial and commercial development of the nation. It therefore brought about the organization of a number of regional and district rate committees. A novel feature of these committees was that they all had in their membership representatives of the shipping interests as well as representatives of the railroads. The committees took the place, during the period of government operation, of the traffic associations formerly maintained by the railroads.

From the standpoint of operating results the manage-

ment of the railroads by the Government was on the whole satisfactory. Arbitrary measures were necessary to obtain the movement of essential traffic, and such arbitrary measures as were desirable the Railroad Administration could and did put into effect. The unification of the physical facilities of the railroads and the redistribution of traffic made it possible to relieve the congestion which existed when Federal control began, and throughout the twenty-six months of government operation the record of traffic movement was good. There were numerous complaints on the part of individual travelers and shippers, and there was unquestionably much reason for complaint, but in nearly all cases the inconveniences suffered by individuals were the necessary result of making the military activities of the Government the matter of paramount consideration.

From a financial standpoint the results of Federal control were not so satisfactory. The advances in rates initiated by the Railroad Administration were insufficient to meet the greatly increased costs of operation, and throughout the period of Federal control there was a deficit. The excess of operating expenses and rentals over operating revenues for the twenty-six months' period amounted to approximately $900,000,000. It is possible that several million dollars more must be paid in taxes before the obligations of the Government are met. Some railroad companies will unquestionably present large claims on account of the under-maintenance of their properties. On the other hand the Government has large sums due from the carriers on account of additions, betterments and loans. It was the opinion of Mr. Walker D. Hines, who succeeded Mr. McAdoo as Director General of Railroads early in 1919, that the balance against the Government would in the end be comparatively small. It will be several years before a final accounting of results can be had.

When hostilities came to an end in November, 1918, the

railroad situation offered one of the most important problems of domestic reconstruction. Government operation had not achieved much popularity with the public, and while a few groups were in favor of its indefinite continuation, the great weight of public opinion was in favor of a speedy restoration of private control. It was generally conceded, however, that before the railroads could safely be returned to their owners it would be necessary for Congress to enact legislation providing for a radical alteration of the railroad policy of the Government. A new Federal railroad policy was finally worked out and embodied in the Transportation Act. This measure, which became a law on February 28, 1920, is by far the most important piece of railroad legislation that Congress has enacted. It will be discussed in the following chapter.

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CHAPTER XXIX

THE TRANSPORTATION ACT OF 1920

Reconstruction plans, 512. The Cummins and the Esch bills, 514. The Transportation Act, 515. Labor disturbances, 523. Rate increases, 524. The business depression, 525. Operation of the law, 528. References, 533.

PRESIDENT WILSON, in his annual message to Congress in December, 1918, urged that the railroad problem should receive speedy consideration. He had no constructive plan of legislation to offer, his only suggestion being that the old railroad policy "of restraint without development" should be modified. The Interstate Commerce Commission, in its annual report for 1918, made certain general recommendations as to what changes Congress should make in the law in the event that the principle of private operation and public regulation should be retained as the basis of future railroad policy. Mr. McAdoo, the Director General of Railroads, advised that the period of Federal control should be extended for at least five years beyond January 1, 1919, asserting that such action would take the railroad question out of politics, would give time to restore the credit of the carriers, and give opportunity to study and test the feasibility of Government control under normal conditions.

Mr. McAdoo's proposal met with little favor among the shipping interests of the country or with the railway executives and the owners of the railroads. The commercial and financial interests of the nation were almost unanimous in urging the speedy restoration of private management under such laws as would conserve railroad credit and permit the expansion of the railway facilities to meet the needs of commerce. In January, 1919, the Association of Rail-

way Executives published a plan of railroad legislation, the most important feature of which was the creation of a Federal Transportation Board which should take over the purely administrative functions of the Interstate Commerce Commission and also certify to the Commission the amount of revenue needed by the railroads in order that they might be properly maintained and their owners receive an adequate return. Other commercial organizations likewise submitted "plans" for the guidance of Congress. The National Association of Owners of Railway Securities, of which S. Davies Warfield was president, proposed a plan, the central feature of which was the establishment of a statutory rule of rate making, which would serve to protect the interests of railway investors. Other plans were submitted by the Citizens' National Railroads League and by the National Transportation Conference organized by the United States Chamber of Commerce.

The plan which provoked the greatest discussion was that known as the Plumb plan, named for its author, Glenn E. Plumb, who had for some time acted as general counsel for the four railroad brotherhoods. Virtually all the advocates of the principle of government ownership of railroads centered their energies upon the promotion of this plan. It proposed, in effect, that the Government should purchase the railroads and entrust their operation to a board of directors in which the railway laborers were to have the controlling voice. It was indorsed by the leading officials of the railroad brotherhoods, by the head of the Railroad Employees' Department of the American Federation of Labor, and by the officers of many other labor organizations.

The Plumb plan met with scant approval by the public at large. It soon became evident, likewise, that Congress was overwhelmingly opposed both to the principle of government ownership and to the continuation of Federal operation for a longer time than was necessary to enact a new

railroad law. The enactment of a satisfactory law, however, presented a problem of no little difficulty. There was a wide divergence of view among the interests which desired the speedy restoration of the railroads to their owners, and their divergence of view was reflected in the varying opinions of the members of Congress who were responsible for passing railroad legislation.

A special session of Congress was called in May to deal with a number of problems of domestic reconstruction. Hearings on the railroad problem were held during the ensuing months both by the Senate Committe on Interstate Commerce and by the House Committee on Interstate and Foreign Commerce. Testimony was given by the advocates of all the "plans" for railroad regulation. In October the Senate committee reported out the Cummins bill, named for Senator Cummins, the chairman of the committee. The Esch bill was reported in the House of Representatives on November 10 and passed by the House on November 17. When it was sent to the Senate, it was amended by the substitution of the Cummins bill, which received a favorable vote on December 20. The disagreement of the two branches of Congress made it necessary to entrust the work of framing the definitive bill to a conference committee representing both houses.

The conference committee began its deliberations during the Christmas holidays. It seemed for a time that it would be impossible for an agreement to be reached. When on December 26 President Wilson issued a proclamation declaring that he would return the railroads under control to their owners on March 1, 1920, it became apparent that Congress could not avoid taking definite action. The members of the conference committee finally compromised their differences and returned a bill which differed in many respects from both the Cummins and the Esch bills. The conference bill was passed in the House by a large majority

on February 18, and five days later it was passed by the Senate. It was signed by the President on February 28, two days before the expiration of the period of Federal control.

The Transportation Act, as the new law was called, was made up chiefly of amendments to the old Interstate Commerce Act. It also contained certain provisions covering problems connected with the return of the roads to their owners, and it created an administrative machinery to deal with railroad labor controversies.

The law guaranteed to the carriers, for a period of six months following the resumption of private operation, a net return equal to the rentals paid during the period of Federal control. The carriers were permitted to make a choice of accepting the Government guarantee, or of assuming complete financial independence after March 1. The law also gave financial assistance to those short lines which the Government had operated for only a short time or had not operated at all. An appropriation of $200,000,000 was set aside, from which the railroad corporations might secure loans, upon the approval of the Interstate Commerce Commission, for a period of two years after the passage of the law. Those carriers which were indebted to the Government, because of advances of cash for capital expenditures made during the period of Federal control, were authorized to fund their obligations for a period of ten years, with an interest rate of 6 per cent. It was stipulated that rates and fares in existence at the termination of Federal control should not be reduced during the guaranty period of six months, except with the approval of the Interstate Commerce Commission, and that during the same period the railroad companies should make no reductions in wages and salaries.

The labor clauses of the Transportation Act were a subject of much controversy. There was a widespread belief

that railroad strikes should be prohibited and that the carriers and their employees should be required to accept the principle of compulsory arbitration of labor disputes. The Cummins bill, as passed by the Senate, forbade railroad strikes; the Esch bill did not contain any compulsory labor clause. The conference report followed the Esch bill. The Transportation Act does not prohibit railroad strikes and it does not provide for compulsory arbitration, but it declares it to be "the duty of all carriers and their officers, employees, and agents to exert every reasonable effort and adopt every available means to avoid any interruption to the operation of any carrier growing out of any dispute between the carrier and the employees or subordinate officials thereof," and provides for official machinery by which all disputes may be settled without resort to extreme methods.

The law authorized the creation of Railroad Boards of Labor Adjustment. These boards may be established by agreement between any carrier, group of carriers, or the carriers as a whole, and any employees or subordinate officials of the carriers. Disputes involving grievances, rules and working conditions, not capable of being settled by direct conference of carriers and their employees may be referred to these boards for hearing and adjudication. The establishment of the boards is entirely optional.

In addition to providing for Boards of Adjustment the Transportation Act created a salaried Railroad Labor Board, consisting of nine members, three representing the railroad employers, three representing the employees, and three representing the public. This Board is authorized to hear all disputes concerning wages, and any dispute involving grievances, rules, and working conditions not capable of being settled by the Adjustment Boards. The act stipulated, too, that in case Adjustment Boards should not be organized, the Labor Board should have jurisdiction

over questions which otherwise would have fallen within the province of the Adjustment Boards. The members of the Labor Board are appointed by the President, with the approval of the Senate, the three members representing respectively the employees and the employers being chosen from nominees designated by these interests. The method by which the employees and employers make and offer their nominations to the President are prescribed by the Interstate Commerce Commission.

In the adjudication of the disputes involving wages and salaries the Railroad Labor Board decides what rates of pay are in its opinion just and reasonable. In determining what is reasonable the Board is required to take into consideration the scale of wages in other industries, the relation between wages and the cost of living, the hazards of employment, the character and regularity of employment, and various other factors which must be taken into account in the consideration of controversies over the reasonable ness of wages. The Board is authorized to require the attendance of witnesses, and it has access to any railroad documents and records that may have a bearing upon the cases which arise. Its decisions have no binding effect either upon the carriers or upon their employees. No penalty is incurred if the decisions of the Board are disregarded. Its effectiveness as an agency for the settlement of disputes depends entirely upon the willingness of employers and employees to accept its decisions.

The most important part of the Transportation Act consists of various amendments to the Interstate Commerce Law. The amendment of chief significance is that prescribing a rule of rate making to be followed by the Interstate Commerce Commission. For many years railway managers and railway investors had been claiming that the Commission had been inclined to treat the railroads in a somewhat niggardly manner, and it was the insistence of

these interests that brought about the inclusion of the statutory rule of rate making in the Transportation Act. The Commission is authorized to divide the country into rate districts or territories and to initiate rates in each territory so that the carriers will "under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation." The Commission determines the value of the property devoted to transportation, and also decides from time to time what percentage of the property value constitutes a "fair return." The law stipulates, however, that during the two years following March 1, 1920, the Commission shall take as a fair return a sum equal to 5½ per cent of the value of the railroad property, but it is authorized, in its discretion, to add a further sum not to exceed one-half of 1 per cent, to make provision for additions, betterments and improvements.

The framers of the Transportation Act were confronted with many difficulties in devising a rule of rate making for the Commission to follow. The most serious problem arose from the fact that the railroads of the United States are by no means on an equal basis with respect to opportunities to obtain traffic and with respect to costs of operation. In the same sections of the country may be found "weak" roads, which serve districts that yield comparatively little traffic and which have high operating costs, and "strong" roads, which have large gross receipts and relatively low operating costs. Congress recognized the fact that rates on competitive traffic must be uniform. If the rates in any region are made high enough to enable the weak roads to prosper, the strong roads will inevitably obtain excessive revenues, while if the rates are established

upon a basis which affords a fair return for the strong roads, the weak roads will soon become bankrupt. Congress acknowledged the necessity of preserving the weak roads, because they are "indispensable to the communities to which they render the services of transportation"; at the same time it was clear that a system of uniform rates which would sustain the weak roads would enable the strong roads to "receive a net railway operating income substantially and unreasonably in excess of a fair return upon the value of their railway property." In an effort to solve this problem there was included in the Transportation Act a provision that a carrier receiving in any year a net railway operating income in excess of 6 per cent should turn over one-half of the excess income to the Interstate Commerce Commission. The half retained by the carriers is to be placed in a reserve fund. The reserve fund of any carrier need not be accumulated beyond a sum equal to 5 per cent of the value of its property. When a fund of 5 per cent is attained the carrier may dispose of its portion of annual excess income in any lawful manner. In years when its net railway operating income falls below 6 per cent it may draw upon the reserve fund for the purpose of paying interest and dividends. The excess earnings which the carriers turn over to the Commission constitute a "general railway contingent fund." It may be used to make loans to carriers which need funds for capital expenditures, or the Commission may use it to purchase transportation facilities and equipment to be leased to carriers under such conditions as the Commission may deem proper.

To a great many members of Congress it appeared that the proper solution of the problem of the "strong" and "weak" railroads was to require that all the roads be consolidated into a limited number of great competitive systems. The Cummins bill provided for the compulsory con-

solidation of the railways into not less than twenty nor more than thirty-five great systems. In the final measure the compulsory feature of the Cummins bill was eliminated, but the Interstate Commerce Commission was directed to "prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems." It was stipulated that competition should be preserved as fully as possible; that, wherever practicable, existing routes and channels of trade should be maintained; and that the several systems should be so arranged that the costs of transportation as between competitive systems and as related to the value of railway property should be the same, as far as practicable, so that the systems could employ uniform rates on competitive traffic and under efficient management earn substantially the same rate of return. When the Commission has agreed upon a tentative plan of consolidation it is to be made public and a formal hearing is to be held, at which all objections to the tentative plan may be presented. Thereafter the Commission will adopt a definite plan for consolidation. The carriers may then voluntarily make consolidations in harmony with the Commission's plan. The Commission is now preparing its plan of consolidation. It is highly probable that when its work is completed a law will be passed requiring the compulsory combination of the railroads into the systems proposed by the Commission.

The other amendments to the Interstate Commerce Law, contained in the Transportation Act, consisted largely of provisions giving new powers of regulation to the Interstate Commerce Commission. The most important additional powers, those authorizing the Commission to regulate the capitalization of railroads and giving the Commission a large measure of control over intrastate rates, have been discussed in previous chapters. An important addition to the rate making power of the Commis-

sion was that it received authority to name minimum as well as maximum rates. Whereas before 1920 the Commission could only prescribe rates which the carriers should observe as a maximum, it may now prescribe the exact rates which carriers may charge for particular services. If rival carriers should now endeavor to engage in a rate war it is possible for the Commission to bring their destructive competition to an end and require them to charge uniform rates sufficiently high to preserve their financial stability.

The authority which the Esch car service act of April, 1918, gave to the Interstate Commerce Commission was somewhat amplified in the Transportation Act. The Commission may give orders with respect to the distribution of cars, and in time of emergency may exercise arbitrary control over the car service of the railroads. The control of the Commission over railroad facilities was also extended by requiring the carriers to obtain from the Commission a certificate of public convenience before undertaking the construction of any extensions or branch lines. The Commission was given the power, in another amendment, to require one carrier to permit the use of its terminal facilities by another carrier, on such terms as the carriers may themselves agree upon, or in the event of a failure to agree, upon such terms as the Commission may fix as just and reasonable. The economies which the Railroad Administration achieved during the period of Federal control by the unification of terminal facilities constituted the chief reason for giving the Commission this important power. There are many large shipping centers in the United States in which the railroad service could be greatly improved if the carriers would coöperate to a greater degree in the use of their freight and passenger terminals.

In one important respect the authority of the Interstate Commerce Commission was curtailed. In the Mann-Elkins

Law of 1910 the Commission was authorized to suspend proposed changes in rates for an initial period of 120 days, and then for a further period of six months, pending an investigation of the reasonableness of the proposed changes. In all the advanced rate cases from 1910 to 1917 the Commission consumed much time in reaching its decisions. The railroad managers protested against the delay. They were all strongly in favor of shortening the time of suspension, and most of them were in favor of depriving the Commission of the authority to suspend proposed changes in rates. While the Commission retains its power of suspension, the Transportation Act provides that the second period of suspension shall not be longer than thirty days. If the Commission finds it impossible to reach a conclusion with respect to the proposed rates within 150 days, the rates go into effect. If the new rates increase the charges for the transportation of freight, the Commission may require the interested carriers to keep an accurate account of all amounts received by reason of any increase, and when a decision is reached, may order the carriers to refund, with interest, such part of the increased charges as may be found not justified.

The membership of the Interstate Commerce Commission was increased to eleven by the Transportation Act, and the salary of each Commissioner was advanced to $12,000 a year.

The most important changes in the Interstate Commerce Act, other than those already mentioned, were a modification of the antipooling clauses in section 5, and a modification of the long-and-short haul rule of section 4. The legalization of pools was discussed in Chapter XIX. The prohibition against charging more for a short haul than for a long haul, on the same line and in the same direction, the shorter being included within the longer distance, without the express approval of the Interstate Commerce Com-

mission, was continued, but certain limits were set as to the extent of discrimination permissible. As the law now stands the Commission may not permit the establishment of a charge to or from the more distant point that is not reasonably compensatory for the service performed; and if "a circuitous rail line or route is, because of such circuity, granted authority to meet the charges of a more direct line or route to or from competitive points and to maintain higher charges to or from the intermediate points on its line, the authority shall not include intermediate points as to which the haul of the petitioning line or route is not longer than that of the direct line or route between the competitive points." Furthermore, authority to charge more for the shorter haul than for the longer may not be granted on account of "merely potential water competition not actually in existence."

On March 1, 1920, the railroads were returned to their owners and private operation was resumed. The return did not take place, however, under favorable conditions. The rolling stock of the individual railroads had been dispersed and scattered throughout the country; the properties of many companies showed the results of undermaintenance during the period of Federal control; the costs of operation were so high that notwithstanding the large amount of traffic hauled, most of the roads, both large and small, showed an operating deficit; and the railway laborers, whose wages had been increased but little in 1919, were clamoring for higher wages to offset the increase in the cost of living. The financial stability of the carriers for the six months following March 1 was insured by the government guarantee, but it was obviously necessary that some provision be made for the time when the aid of the Federal Treasury would no longer be available.

The most pressing problem at the time when Federal control terminated was the labor problem. During the later

months of 1919 there had been several "unauthorized strikes"—strikes not called by the action of labor organizations—among certain classes of employees, who felt that their compensation was inadequate. These strikes had been brought to an end by the firm action of Director General Hines, but the grievances of the workers had not been removed. In April, 1920, there was a recurrence of strikes in several large railway centers, so many men quitting work that the operation of the leading eastern railroads was crippled. On April 15 the Railroad Labor Board, created by the Transportation Act, was organized, and it proceeded at once to enter upon a hearing of the pending disputes between the carriers and their employees. On July 30 the Labor Board rendered its decision. Taking into account the fact that previous to 1917 railroad wages had not advanced so rapidly as the cost of living and that throughout 1919 there had been no substantial increase in pay, it ordered a general advance in the rate of compensation of nearly all classes of railway labor. It was estimated that the decision added approximately $718,000,000 to the annual operating expenses of the carriers.

Meanwhile, the Interstate Commerce Commission had undertaken its task of initiating such railroad rates as would enable the carriers to earn the "fair return" provided for in the Transportation Act. It was clear that it would be necessary for the Commission to make a general increase in rates and fares. After numerous hearings the Commission handed down its decision on July 29. It assumed the value of the railroad property devoted to transportation to be $18,900,000,000 and endeavored to establish a body of rates which would yield a return of 6 per cent on this valuation. Dividing the country into four rate districts—Eastern, Southern, Western and Mountain Pacific—the Commission ordered that freight rates be increased 40 per cent in the Eastern district, 25 per cent in the Southern,

35 per cent in the Western and 25 per cent in the Mountain Pacific. It ordered that joint rates applying from any one district to another should be advanced 33⅓ per cent. Passenger fares, excess baggage rates and rates on milk and cream carried on passenger trains were increased 20 per cent, and upon passengers traveling in Pullman cars a surcharge of 50 per cent of the Pullman fare was imposed, the revenues from the surcharge to accrue to the railroad companies. It was provided that the new rates could be put into effect upon five days' notice to the Commission and to the public by the filing and posting of tariffs in accordance with the rules of the Commission. In nearly all cases the increases became effective before the end of August, 1920.

The net revenues of the carriers were so small during the period of Federal guaranty that the Government became obligated to the railroads for an amount approximating $600,000,000. The operating ratio of the railroads as a whole during this period was about 95 per cent, the highest point it had ever reached. Notwithstanding the adverse conditions it was generally believed, when the period of Federal guaranty ended, that the railroads would enter upon a period of prosperity. The Commission had permitted a generous increase in rates, railway labor was satisfied, and a steady increase in the volume of traffic handled during the summer had shown that the railroads had succeeded in reëstablishing their organizations and were improving steadily the efficiency of service.

The favorable outlook proved to be of short duration. Had the volume of traffic continued to grow—or even had it remained undiminished—the increased rates permitted by the Interstate Commerce Commission might have yielded the fair return which the Transportation Act called for. Unfortunately for the railroads, the volume of traffic began to show a sharp decline. During the summer of 1920, the

period of business expansion which followed the termination of the World War, reached its peak, and a reaction set in. Prices began to recede, and business activity steadily declined. By the close of the year the United States was suffering from a general business depression which affected virtually all branches of industrial and commercial activity. Foreign commerce, which had been unusually active since 1914, showed a marked decline, and domestic trade likewise was greatly contracted. Factories and mines curtailed their operations, building activity was checked, the demand for the products of the farms diminished, thousands of laborers were thrown out of work. The result of the industrial depression was immediately reflected in a substantial decrease of the volume of railroad traffic. For nearly five years the shippers of the United States had suffered inconvenience because of a shortage of cars. The car shortage was now succeeded by a car surplus, which continued to grow until by May 1, 1921, more than 400,000 cars, nearly one-sixth of the freight car equipment of the railroads, were standing idle in the railroad terminals.

The railroad managers did what they could to meet the adverse conditions which confronted them. They economized on maintenance expenditures, spent as little as possible on new facilities, and decreased their working forces by dismissing thousands of employees. Despite all these measures of economy there was no perceptible improvement in the railway situation during the early months of 1921. The total expenses of operation were reduced, but the reduction was much less than the decline in the gross revenues of the carriers. The unfavorable financial reports of the leading roads caused a steady fall in the value of railway securities; several roads, with records of uninterrupted dividend payments covering long periods of time, were compelled either to reduce or to omit entirely their

customary dividends; it was manifest that if the gross revenues of the carriers could not be materially increased or the expenses of operation greatly reduced it would be only a question of time until many railroad corporations would be insolvent.

An increase of gross revenues could be effected only by the enlargement of the volume of traffic carried at existing rates or by some readjustment of rates. With the general business situation such as it was there was small hope of an early advance in freight and passenger traffic. It was the consensus of opinion among railroad officials and shippers that railroad rates were already as high "as the traffic would bear," and any further advance in charges could not be seriously considered. In fact, it was the opinion in many sections of the country that freight rates were entirely too high, that the diminution of railroad traffic was caused in part by excessive charges. There was a disposition in some quarters to ascribe the commercial depression to the increase in freight rates, but it was apparent that many other causes had contributed to the business reaction, which had begun, as a matter of fact, before the advance in railroad charges became effective. With little prospect of an early recovery of traffic the railroad managers turned their attention to paring down expenses by a readjustment of the wages paid to railroad employees. The nation-wide depression in business had brought about a marked decrease in the cost of living and also had forced a reduction in the wages of nearly all factory employees and farm workers. The railway executives felt that they were justified in seeking a reduction of labor costs commensurate with the reduction that had taken place in other branches of industry.

The labor costs of operation constitute by far the largest part of the railroad expenses, and these costs in 1920 and 1921 were proportionally much greater than they had been in any previous years. In part the high labor costs

were due to high wages, and in part they were due to "working agreements" adopted during the period of Federal control, which resulted in the payment to several classes of labor of amounts entirely out of proportion to services rendered. Just before the termination of Federal control the Railroad Administration entered into several costly agreements with the shop workers, maintenance employees and clerical forces of the railroads. These agreements provided for excessive payment for overtime work and established rules which frequently made it necessary to employ a half dozen men to do work which could easily be accomplished by a single employee. They also eliminated all piece work in railroad shops, substituting in its place payment by the hour. The result had been a material decline in the efficiency of shop service and a large increase in total maintenance costs. The railroad managers began an attempt, shortly after the period of Federal guaranty ended, to secure a modification of these working agreements.

The Transportation Act had provided that the carriers and their employees might establish Adjustment Boards to consider all disputes not involving rates of wages. When the question of establishing such boards arose, the railroad managers and the railroad labor unions differed as to the type of boards which should be created. The unions were in favor of National Adjustment Boards for the different classes of workmen, while the railroad officials, mindful of the different conditions existing on different roads, desired Adjustment Boards for each railroad system, or at most, a number of regional boards. The opposing groups failed to reach an agreement, and the Railroad Labor Board held that the question of what kind of Adjustment Boards should be created was not a question which it was authorized to decide. The result was that no Adjustment Boards were created. At the time the Railroad Labor Board held its hearings concerning the

advance in wages, in 1920, the matter of continuing the national agreements was presented for consideration. In its decision of July 20 the Board declined to modify the agreements because there had been insufficient time for adequate consideration. It ordered that the national agreements be continued in effect and announced that a further hearing would be held as to their reasonableness. The Labor Board entered upon a hearing of the dispute relating to the working agreements early in January, 1921. On January 31, the representative of the railway executives, asserting that the financial condition of the railroads was becoming so alarming that summary action was needed to prevent a general collapse, urged that the Board order all rules and working agreements entered into by the Railroad Administration to be terminated at once and that the rules in effect when Federal control began be reëstablished. He also asked that the Board set aside its decision of July 20, 1920, as to what constituted reasonable wages for unskilled labor and substitute the prevailing rate of wages in the various regions served by any carrier.

The Labor Board, in a decision issued February 10, declined to set aside the national agreements and substitute therefor the rules existing at the time Federal control began, on the ground that in its decisions it was bound by the terms of the Transportation Act to establish working conditions which in its opinion were just and reasonable. Since no evidence had been offered as to the reasonableness of the working conditions which the railway managers asked to have restored, it could not legally take the action urged by the cerriers. It likewise refused to order into effect a lower rate of wages for unskilled labor on the ground that it could not consider disputes over wages until the carriers had endeavored, in accordance with the terms of the Transportation Act, to settle disputes by conference with their workmen. No conferences had been held with

respect to the reductions which the carriers asked on January 31.

After this decision was rendered the Labor Board continued its hearing on the question of modifying the national agreements. The managers of the various railways called conferences with the various classes of employees and proposed to their workmen a general reduction of wages. In nearly all cases the workmen refused to accept the suggested reductions, and the carriers filed petitions with the Labor Board.

On April 14 the Labor Board reached a decision on the question of working rules. It ordered that the national agreements adopted during the period of Federal control be abrogated on July 1, 1921, and directed that before that time the carriers endeavor to negotiate with their employees a new and "reasonable" system of rules. The Board announced that in case of the failure of the carriers to reach an agreement with their employees it would promulgate such rules as it deemed just and reasonable as soon as possible after July 1. In rendering its decision the Board laid down certain general principles for the carriers to follow in establishing new working agreements. It upheld the right of the carriers to maintain necessary discipline, recognized the right of the employees to organize and carry on negotiations through representatives of their own choosing, declared that the laborers had a right to be consulted concerning any proposed change in rules or wages, approved the principle of the eight-hour day, and urged the necessity of complete coöperation between workmen and employers.

Following the decision on the question of working agreements the Board took up the numerous appeals which the carriers had filed concerning the reduction of wages. On May 17 the Board published a resolution declaring that it was necessary, and likewise just, both to the carriers and

their employees, that some reduction be made in the prevailing rates of wages, basing its decision primarily upon the fact that there had been a material decline in the cost of living since it had given its wage decision the previous year. It did not at this time give a decision as to what reduction it considered reasonable, but on June 1, announced a new schedule of wages, to take effect a month later. The new schedule provided for a general reduction of about 12 per cent in the wages of railroad employees.

The plight of the railroads became so serious during the early months of 1921 that Congress adopted a resolution providing for a general inquiry into the entire railroad situation. This inquiry was due not only to the financial reverses of the carriers but also to a widespread demand among agricultural, lumbering, and mining interests that the level of railroad rates be reduced in conformity with the general decline of commodity prices. The Congressional investigation began in May, 1921. It is not unlikely that the investigation will result in further legislation for the purpose of improving the financial stability of the carriers.

With declining costs of operation and with favorable prospects for a revival of general business prosperity the outlook for the railroads is considerably brighter than it has been at any time since the termination of Federal control. But the transportation system will probably suffer for several years to come from the unfortunate conditions that it was subjected to during the war and during the period of reconstruction. The misfortunes of the railroads have been due in a large measure to the unwise financial policy of the Railroad Administration. There was no justification for the Administration's policy of operating the railroads at a loss. While the war was in progress the costs of operation in all kinds of business mounted at a rapid rate, but in all industries except the railroad business,

prices were advanced to such an extent that not only were the leading business establishments able to make large profits but they were able to accumulate a handsome surplus with which to tide over the initial stages of the period of reaction, when costs for a time were outrunning revenues. Instead of accumulating a surplus for the use of the railroads the Railroad Administration kept rates unreasonably low and incurred a deficit. When the railroad owners assumed control of their properties they were compelled to put railroad rates up, just at the time when prices in all other lines of business were coming down. This action had an unfavorable influence upon business, and it also was an obstacle to securing the consent of the railroad workers to necessary reductions in wages. Had railroad rates been advanced during Federal control to the same extent that commodity prices had been advanced, the Government would have suffered no loss; it would have accumulated a large fund to tide the carriers over during the period of business depression; it would have been possible to reduce rates in 1920 instead of advancing them; the establishment of a lower wage level would have been an easier achievement, and the reduction of rates would have had a stabilizing and perhaps a stimulating effect upon business, whereas the advance of rates only tended to accentuate the business depression. It was a grave error to permit the current of railroad finance to run counter to the current in other branches of economic activity. To remove the effects of this error it may be necessary for the Government to extend financial aid to the railroads by funding the obligations of the carriers to the government, or by making long-time loans bearing a low rate of interest.

Whatever may be the trend of the railroad situation in the immediate future, it must not be supposed that the railroad system of the United States will be permitted to undergo physical and financial collapse. Of all the great

economic activities of the country none is so indispensable as adequate transportation. The Transportation Act gives evidence that Congress is disposed to adopt a constructive policy under which the railroad business will become strong and prosperous, so that it can expand at a normal rate, maintain its credit, and serve the needs of the nation. The law has been in effect but a short time and conditions have been so abnormal that it is yet impossible to determine whether further legislation will be necessary. It would be unwise to make any radical changes until the present law has been adequately tested under normal conditions.

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CHAPTER XXX

THE COURTS AND RAILROAD REGULATION

Laws are partly court made, 534. Function of the judiciary in railroad regulation, 536. Development of judicial review, 536. State rate regulation, 537. The relation of the courts to unreasonable rates made by railroad companies, 541. Injunctions to prevent rate advances, 543. Injunctions to prevent rate wars, 544. Injunctions against secret rebates, 547. Injunctions and labor disputes, 548. The general law regarding strikes, 548. Injunctions to protect property and personal rights, 549. Injunctions compelling railroad employees to work, 550. Use of the injunction in the Debs strike of 1894, 551. Regulation of the use of the injunction by the Clayton Antitrust Act, 553. Railroad receiverships, 554. Railroad insolvency in the United States, 556. Causes of railroad insolvency, 557. Objections to the present system of railroad receiverships, 559. Suggested changes, 560. References, 561.

THE function of regulating railroads is shared jointly by all three branches of the Government—the executive, legislative, and judicial. The scope and limits of the legislative powers of railroad regulation have been fixed by the courts, and the courts have so modified both State and national legislation as virtually to have shared with the law-making branch of the State legislatures and with Congress the exercise of legislative functions. Much law is accurately styled court-made, and this is particularly true of the laws regulating railways.

This influence of the courts upon the laws regulating railways is strikingly illustrated by the decision of the Supreme Court in *United States* v. *Trans-Missouri Freight Association* (166 U. S. 290), in which the court decided

that the Sherman Antitrust law of July 2, 1890, applied to railway companies, and made illegal the agreements of competing railway companies for the maintenance of reasonable rates. This law was not generally supposed to apply to railway rate agreements. Indeed, this view of the law was entertained by the United States Circuit Court and the Circuit Court of Appeals in the Trans-Missouri Freight Association case; but the Supreme Court by a close decision—five judges approving, four dissenting—decided that the law of 1890 made unlawful all agreements between rival railroads for the maintenance of reasonable rates. The interpretation thus put upon the law by the Supreme Court compelled the reorganization of railway traffic associations, modified the methods of railway management, and gave a new phase to the governmental regulation of railroads.

The division of the functions of government in the United States among its three branches—the legislative, executive, and judicial—while sharply drawn, is not complete. The legislature exercises executive functions, the executive participates in legislation, and the judiciary by interpreting and applying the laws validates or invalidates laws and restricts or widens the scope of legislation. The courts also coöperate with the executive in the enforcement of laws. The powers of the judiciary as regards transportation and all other subjects are derived from three sources: the organic law of the constitutions, the statutory laws, and the common law. The national and State constitutions confer upon the judiciary the general power of interpreting and applying the law, and enumerate the subjects over which the courts shall have jurisdiction. The powers over railways conferred upon the courts by State and Federal statutes are given in the three preceding chapters. The courts are required to assist the commissions, State and Federal, by compelling recalcitrant witnesses

to appear and testify before those bodies; the State's attorneys are the officers charged with the duty of prosecuting the violators of laws for the regulation of railways, and for prosecuting those who disobey or ignore the orders of the commissions; the Federal statute of 1887 made the validity of the commission's orders dependent upon the decrees of the courts, and by doing this it made the courts what Congress had no intention of making them—joint investigators with the commission of the facts concerning transportation questions arising under the law. This was wisely changed in 1906.

The power of railway regulation which the judiciary has in its equity powers is far greater than its statutory powers, and of much more significance to the public welfare. The authority which the courts have been given by statutes is definite and fixed, but the scope of equity jurisdiction, except where determined at certain points by law, may be extended at the will of the judiciary. Indeed, the rapid extension of the equity powers of the courts is the most characteristic fact of the past century's legal history.

It has been in the exercise of their equity powers over three subjects that the courts have exerted their strongest influence upon governmental regulation of railways. Those three subjects are (1) the fixing of rates and fares by governmental authority; (2) the intervention of the government in railway labor disputes; and (3) railway receiverships or the management of insolvent railroads by the courts.

A court has no authority to make railway rates but it has the power to unmake rates established by legislative authority. When either the State or the Federal Government makes an order establishing rates to be observed by the railroads, such an order may be set aside by an injunction issued by a court of competent jurisdiction. State

courts are confined to the consideration of rates on intrastate traffic only, but the Federal courts may determine the reasonableness of the rates made either by State or by Federal legislative authority. That is, the Federal judiciary has original jurisdiction over rate regulations established by Congress acting through the Interstate Commerce Commission, or by State legislatures acting directly by statutory requirements or through State commissions.

The attitude of the Federal courts towards rates fixed by State law has had an interesting course of development. When the American States began to exercise the function of fixing rates, the railroad companies sought to prove that the railway companies alone, and not the State legislatures, had the power to fix charges, and that if a shipper or passenger considered himself to have been overcharged, his recourse must be to the courts and not to the legislature. In the famous "granger cases," decided in 1877, which were the first suits in which the right of the State legislature to establish rates was questioned, the railroad companies claimed "that the owner of property is entitled to a reasonable compensation for its use, even though it be clothed with a public interest, and that what is reasonable is a judicial and not a legislative question." (*Munn* v. *Illinois,* 94 U. S. 114.) The reply of the court was:

> In countries where the common law prevails, it has been customary from time immemorial for the Legislature to declare what shall be a reasonable compensation under such circumstances, or, perhaps more properly speaking, to fix a maximum beyond which any charge made would be unreasonable. . . . The controlling fact is the power to regulate at all. If that exists, the right to establish the maximum of charge, as one of the means of regulation, is implied. . . . We know that this is a power which may be abused; but that is no argument against its existence. For protection against abuse by the Legislatures the people must resort to the polls, not to the courts.

In another of the same group of cases (*C. B. & Q. R. R. Co.* v. *Cutts,* 94 U. S. 155), involving the validity of the Iowa law regulating railroad rates, the Supreme Court upheld the power of the State to fix charges and declared that railroads were subject to legislative control as to their rates and fares unless specifically protected by their charters; while in still another case (*Peik* v. *Chicago and Northwestern Rlwy. Co.,* 94 U. S. 164) the court upheld a Wisconsin statute which provided maximum charges not only upon the interior traffic of that State but upon interstate traffic entering and leaving Wisconsin.[1] The court again declared:

> Where property has been clothed with a public interest, the legislature may fix a limit to that which shall in law be reasonable for its use. This limit binds the courts as well as the people. If it has been improperly fixed, the legislature, not the courts, must be appealed to for the change.

In the next important group of cases testing the validity of State laws for the regulation of rates, the Mississippi Railroad Commission cases (116 U. S. 307-347), decided in 1885, the Supreme Court declared that a charter which granted to a railroad company the power "from time to time to fix, regulate and receive the toll and charges" to be secured for transportation did not deprive the State of the right, within the limits of its general authority, to declare what rates should be deemed reasonable. But though upholding the power of a State to regulate transportation charges the court made the following extremely significant observation:

> From what has thus been said it is not to be inferred that this power of limitation or regulation is itself without limit.

[1] This power to fix charges on interstate traffic was denied the States in the Wabash case of 1886 (118 U. S. 557). See p. 478.

This power to regulate is not a power to destroy, and limitation is not the equivalent of confiscation. Under pretense of regulating fares and freights, the State cannot require a railroad corporation to carry persons or property without reward; neither can it do that which in law amounts to a taking of private property for public use without just compensation, or without due process of law.

Five years later, in 1890, in the Minnesota Railroad and Warehouse Commission case (*C. M. & St. P. R. R. Co.* v. *Minnesota,* 134 U. S. 418), the Supreme Court annulled as unconstitutional a Minnesota law which permitted a commission to establish railroad rates which were to be final, and forbade the courts to interfere with the orders of the commission. The court declared that "the question of the reasonableness of a rate of charge for transportation by a railroad company . . . is eminently a question for judicial investigation, requiring due process of law for its determination." Four years later in the case of *Reagan* v. *Farmers Loan and Trust Company* (154 U. S. 362), the Supreme Court again asserted the right of the judiciary to pass upon the reasonableness of rates fixed by law, and sustained a portion of a decision of the United States Circuit Court for the Western District of Texas, which actually set aside certain rates established by the Texas Railroad Commission because they were so low as to violate the fourteenth amendment of the Federal Constitution which declares that no "State shall deprive any person of life, liberty, or property without due process of law."

Another important assertion of its equity powers over railway charges was made by the Supreme Court in 1898. A Nebraska statute, passed in 1893, fixing "reasonable maximum rates to be charged for the transportation of freights," gave the railroad companies of the State the right to bring action in the Supreme Court of the State

to test the reasonableness of the rates fixed by the legislature. If the court considered the rates to be unreasonably low and unjust, it could order the State Board of Transportation to raise the rates. The constitutionality of the law was soon tested. The railway companies took the ground that the rates fixed by the Nebraska statute were unreasonably low, and certain of their stockholders not citizens of Nebraska sued in the United States Circuit Court for an injunction prohibiting the enforcement of the rates fixed by the State law, and such an injunction was granted. It was claimed by the attorneys for the State of Nebraska that the Federal Court had no equity jurisdiction in the suit, because the statute had given the railroad companies an adequate remedy at law by granting them the right to appeal to the Supreme Court of the State for an order on the Board of Transportation to correct any unreasonable rate. The Federal courts, however, did not accept that view, and the Supreme Court held that

> one who is entitled to sue in the Federal Circuit Court may invoke its jurisdiction in equity whenever the established principles and rules of equity permit such a suit in that court; and he cannot be deprived of that right by reason of his being allowed to sue at law in a State court on the same cause of action. (*Smyth* v. *Ames*, 169 U. S. 466.)

The Supreme Court, moreover, affirmed the decision of the Circuit Court, and set aside the rates established by the Nebraska statute of 1893, because the court believed they were unconstitutional.

By this decision the Supreme Court fully established the right of the Federal judiciary to invalidate rates prescribed by law. This right was reaffirmed and strengthened in the *ex parte* Young case of 1908 (209 U. S. 123), when the Supreme Court sustained an injunction issued by the

Circuit Court for the District of Minnesota to prevent the Attorney General of the State of Minnesota from enforcing a rate law of that State. The Supreme Court again declared that the reasonableness of a State-made rate was a Federal question which could be taken directly to the Federal courts for adjudication. On many occasions in recent years the Federal courts have heard cases involving the validity of rates established by law, and in so doing they have assumed an important position in the regulation of railway rates by the Government.

With regard to passing upon the reasonableness of rates established by the railway companies, the courts have now but little to do, inasmuch as questions involving the reasonableness of railroad charges are now brought before State commissions and the Interstate Commerce Commission. Formerly when carriers charged unreasonably high or extortionate rates a shipper had the right, under the common law, to sue in the courts for damages, and if such an action was brought it was necessary for the court hearing the suit to determine the question of the reasonableness of the rate charged. Theoretically, this privilege gave each individual protection against losses from excessive or unjust charges for railroad transportation, but in practice this protection was inadequate, because most persons preferred to bear an injustice rather than to assume the trouble, expense, and business risks that a lawsuit would involve. Furthermore, the business losses resulting from an unreasonable rate are seldom covered by the excessive amount of the charge; the chief losses are those caused by the injury done to the complainant's business. A discriminating or unreasonably high rate may seriously cripple or ruin a shipper by diverting his business to a more fortunate competitor whose railroad charges are lower. One reason for the establishment of the State railroad commissions and the Interstate Commerce Commission was to provide a

public agency whereby the aggrieved shipper or passenger might secure legal redress without undue expense or trouble.

Though the Interstate Commerce Act provides that "any person or persons claiming to be damaged by any common carrier subject to the provisions of this Act may either make complaint to the Commission . . . or may bring suit . . . for the recovery of damages . . . in any district or circuit court of the United States of competent jurisdiction," the Supreme Court has wisely held that action for damages in a court, to recover losses due to an alleged unreasonable rate, will not be sustained until the commission has passed upon the question of the reasonableness of the rate complained of (*Texas and P. Rlwy. Co.* v. *Abilene Cotton Oil Co.*, 204 U. S. 426). Were not this the practice of the courts a situation might easily arise in which the same rate would be held reasonable by the judiciary and unreasonable by the commission. As the Supreme Court said in another decision (*B. and O. R. R. Co.* v. *Pitcairn Coal Co.*, 215 U. S. 481), "any other view would give rise to inextricable confusion, would create unjust preferences and undue discriminations, would frustrate the purposes of the act [to regulate commerce], and, in effect, cause the act to destroy itself."

The Supreme Court has also held that mere negative orders of the commission are not subject to court review. That is, if a shipper complains that a rate is unreasonable and the commission, after full hearing, decides upon the evidence presented that the rate is reasonable, and dismisses the complaint, the shipper has no right of appeal to the courts for a reversal of the commission's finding. If the courts should sustain an appeal under such circumstances, they would be exercising the administrative functions which belong only to the commission (*Procter & Gamble Co.* v. *United States*, 225 U. S. 282; *Hooker* v. *Knapp*, 225 U. S. 302).

While the Federal courts under the Interstate Commerce law do not determine the reasonableness of rates established by the railroads, they nevertheless have exercised not a little control over the rate making practices of the carriers. For example, the courts have at times prevented the railroads from advancing rates. An instance of this occurred in November 1898, when the United States Circuit Court at Denver, Col., issued a temporary injunction restraining the Southern Pacific and other railroads from putting into effect a proposed advance of 33 per cent in the rates on iron and steel from Colorado points to the Pacific coast. The application for this injunction was made by the Colorado Fuel and Iron Company, whose products were in part marketed on the Pacific coast. The reasoning of the court in this case states very clearly the inadequacy of legal processes for the recovery of damages resulting from unreasonable rates. Among other things the court said:

> If the rate shall be raised as proposed and complainant shall be excluded from the market, as stated in the bill will be the case, in case this notice is carried out, no compensation which can be obtained in damages would be adequate. It would be impracticable to show in an action at law what the losses resulting from such a procedure might be, and so it would seem that equity can afford the only adequate relief under such circumstances.

The provision of the Mann-Elkins Act of 1910 giving the Interstate Commerce Commission the power to suspend proposed changes in rates, pending an investigation into their reasonableness, was framed to protect shippers from the danger of losses which would be incurred from increased rates which could be legally charged until declared unreasonable by competent authority. Just previous to the enactment of this law there had been a concerted movement among the eastern and western trunk line railroads to put

into effect a general increase of rates. A temporary injunction was issued against the western carriers, preventing the increase on the grounds that the simultaneous action of the railroads was a violation of the Sherman Antitrust law. Before the date set for the final hearing of the case the railroad companies withdrew the proposed schedules and legal proceedings were discontinued. The carriers probably feared that their traffic associations, through which their informal rate agreements are arranged, would have to be abandoned and the way thus prepared for entirely unrestricted competition. By withdrawing the proposed rates and permitting the discontinuance of the injunction suits, the traffic associations were saved; the Mann-Elkins Act gave the shippers more and better protection against increases in rates than could be secured in ordinary court proceedings.

The courts have used their powers of injunction not only to prevent the railroads from charging excessive rates, but also to enjoin them from cutting rates. In preventing advances the courts have acted in the interests of shippers; in stopping rate reductions action was taken for the relief of the owners of the railway securities and of the shippers whose business might suffer. There is at least one instance of a rate war having been checked by injunctions of the courts. In July 1896 a controversy arose between the Seaboard Air Line and the Southern Railway Company, two corporations controlling a large part of the traffic of the southeastern section of the United States. The Seaboard Air Line began the rate cutting by taking one-third off its rates on traffic to those points south of Baltimore where it had to meet the competition of its rival. The Southern Railway Company met this cut, whereupon the Seaboard extended the cut to its traffic from Boston, Providence, New York, and Philadelphia to southern cities, and announced that if the Southern Rail-

way should meet the cut a further reduction would be made in the Seaboard's charges. The reply of the Southern Railway to this challenge was the announcement of a cut of 80 per cent, to go into effect 10 days later, August 1, 1898.

At this stage of the war the United States District Court of North Carolina, Judge Simonton, was asked to enjoin the contending roads from carrying out the rate reductions that had been announced. The prayer for this injunction was made by the receiver of the Port Royal and Augusta Railway, an insolvent company forming one of the connections of the Seaboard Air Line. The prayer was based on the plea that the threatened rate war would result in "the certain destruction of the railroad property in the hands of the receiver." The court appealed to granted a temporary injunction until the 15th of August, but on that date the injunction was not made permanent, because some of the companies affected by the injunction were outside of the jurisdiction of the District Court of North Carolina.

With the removal of Judge Simonton's injunction the rate war broke out afresh, but the Federal courts were again successfully appealed to. This time an association of merchants, the Wholesale Grocers' Association of Augusta, appealed to Judge Speer of the United States District Court of Southern Georgia, sitting in Augusta, for an injunction against the railroads, on the ground that the low rates to Atlanta constituted an unjust discrimination against Augusta, Macon, and other cities, and violated section three of the Interstate Commerce law. Section twenty-two of the act passed in 1887 gives the district and circuit courts power to issue such an injunction as was asked for by the Augusta merchants, and on September 10 Judge Speer granted a temporary injunction, enjoining the railroad companies to restore the rate that had been in force September 5. The

date for the hearing was fixed for the 24th. The Southern Railway Company restored its rates according to the order of the court, and the Seaboard did the same with its charges to some places. The Seaboard, however, had no line entering Atlanta, and there was some doubt as to the extent of the jurisdiction of the court that had issued the injunction; consequently, it did not restore its rates to all points. This difficulty as regards jurisdiction was settled by the issue of an injunction by Judge Hughes of the United States Circuit Court for the Eastern District of Virginia, sitting at Richmond.

This injunction of the Circuit Court is the most significant of the three that have been mentioned, because it was issued to protect the owners of railway bonds. The complainants were the Baltimore Trust and Guarantee Company and other financial institutions holding railroad bonds, who sued for an injunction on the ground that the rate war was destroying their property, and that they had no means of preventing that destruction by an action at law.

Before the 1st of October all rates were restored and the war was brought to an end. The courts did actually terminate a rate war, and did so by enjoining the railroads against charging rates that were unjustly low. One injunction was issued to prohibit illegal discrimination; the other two were to prevent the destruction of property. Inasmuch as the questions at issue in these cases did not reach the Supreme Court for adjudication, it was not finally settled that the Federal courts actually possess the power to declare rates unreasonably low as well as unreasonably high, but that the courts do have this power is rendered very probable by the issue of the above injunctions by three different Federal courts.

When the Mann-Elkins Act was passed it was suggested that the railroads be given the same protection against the unreasonable cutting of rates by rival lines as was given the

shippers against unreasonable increases by the railroads. It was not until the Transportation Act of 1920 was passed that adequate provision was made to protect railways from the effects of rate wars. This was accomplished by giving to the Interstate Commerce Commission authority to establish minimum as well as maximum charges.

Another use of the equity power of the courts to control railway charges has been to enjoin railroad companies from secretly cutting rates. It was found by the Interstate Commerce Commission at the close of 1901 that the rates on grain, grain products, and packing-house products were being secretly cut, and that the published rates were not being observed. The giving of secret rates was a criminal offense, and the United States Department of Justice was informed by the commission that the Interstate Commerce law was being violated, but in this case, as in former instances, the Government was unable to enforce the criminal provisions of that law, because the persons who had knowledge of secret cuttings of rates were loath to give to the State evidence that might cause those who gave the special rates (often their own business acquaintances) to be sent to prison. Realizing that the reliance upon criminal prosecutions for the prevention of rate discriminations would not secure the observance of the law, the Interstate Commerce Commission applied to the Federal Circuit Court at Kansas City and Chicago in March 1902, to enjoin the leading railway companies of the central West to observe their published schedules of rates. Temporary injunctions were granted as requested; indeed, most of the railroad companies concerned were said to have welcomed the injunctions, because the restraining orders of the courts would enable the companies to enforce their published rates. Railroads do not usually cut rates because they wish to, but because they think they must in order to secure or hold

traffic. Arguments as to making the temporary injunctions permanent were not heard in Chicago until December 1902. The injunctions were allowed to stand, and the Elkins law of February 17, 1903, gave the courts definite power to issue such writs of injunction.

Injunctions in Labor Disputes

In connection with the disputes between labor and capital, the equity powers of the courts have frequently been employed to protect the interests of one or the other of the contending parties or of the general public. By their intervention in railway labor controversies the Federal courts have exercised a regulative authority of considerable importance over the railroad service.

As the law in regard to striking has been interpreted by the American courts, railroad employees and other workmen have a right either singly or in a body to quit their employment at any time, provided they do not violate a contract in doing so, and provided they quit peaceably, without violence, and without concerted actions intended to injure their employer or his business. It is permissible for laborers to refrain from working, and to advise and encourage others, by peaceable argument and persuasion, to quit their employment. A strike may be legal, but in many, if not most cases, the strikers are led to resort to illegal acts, because the success of the strike depends upon their preventing their employer from securing other men to fill the places of the strikers. To accomplish this, intimidation and violence are frequently necessary.

In the case of railroad employees several exceptions have been made by State and Federal statutes to this general law of strikes. In order to prevent the loss of life and the destruction of property, laws have been passed making it a penal offense for a locomotive engineer, conductor,

brakeman, baggage-master, or other railroad employee to abandon his engine, car, or train when it is *en route* to its regular destination, or to injure or disable any engine or car so that it will not be fit for immediate use. The courts have also held it to be unlawful for an engineer on one road to aid a strike against some other road by refusing to haul the cars of such connecting company.

In numerous instances railroad companies and other employers have appealed successfully to the courts for the issue of mandatory writs enjoining strikers from destroying the property of the companies, from intimidating men to prevent their taking the places vacated by the strikers, and from doing such other acts as will render it impossible for the railroad company to perform its services to the public. In the past the courts have often made these injunctions very comprehensive, and have prevented persons not only from destroying property and using threats, intimidation, or force to induce men to quit the service of a railroad or not to engage in its employment, but also "from *in any manner* interfering with" the movement of the trains. Moreover, and, what is more important, these injunctions, instead of being directed against only those persons named in the bills, have included "all persons combining and conspiring with them, and *all other persons whomsoever.*" Because of their wide scope, these writs have been popularly called blanket injunctions, and their purpose and effect have been to substitute for the punishments provided by the statutes against crimes the surer and speedier remedy of the mandatory processes of the courts sitting in the exercise of their equity powers.

The courts may in some instances order railway employees—while they remain in the service of their employer—to perform their regular services. Such an order was issued in 1893 by a Federal court in connection with a strike on the Toledo, Ann Arbor and Northern Michi-

gan Railroad. This railroad connects with the Lake Shore road at Toledo, and the engineers on the Lake Shore were ordered by their brotherhood not to haul the cars received from the Ann Arbor line. The Ann Arbor company, acting in accordance with the provisions of sections ten and twenty-two of the Interstate Commerce law, appealed to the courts for a mandamus to compel the Lake Shore to receive and haul the freight offered. The court granted the writ, and enjoined both the officers and *employees* of the roads connecting with the Ann Arbor to receive and forward its freight. The court admitted the right of the engineers to leave the employment of the roads connecting with the Ann Arbor, but held that while the engineers continued in their employment they must handle the freight received from the Ann Arbor company. This ruling of the lower court was upheld by the Supreme Court. In refusing to haul the freight received from the Ann Arbor company the engineers of the Lake Shore and other roads were obeying a by-law of the Brotherhood of Locomotive Engineers requiring its members to refuse to handle the traffic from roads where an authorized strike was in progress. The Federal courts held this rule to be a violation of the anti-trust law of July 2, 1890, and the brotherhood was ordered to abandon the rule, which was done.

In 1894 an order was made by Judge Jenkins of the United States Circuit Court, sitting in Milwaukee, enjoining the employees of the Northern Pacific (which road was then insolvent and was being managed by receivers appointed by Judge Jenkins) "from combining and conspiring to quit, with or without notice, the service of said receivers." The purpose of the order was to prevent a threatened strike. This order was, however, overruled by the Circuit Court of Appeals, as was also an injunction, issued the same year, enjoining the employees of the Union Pacific Railway (then insolvent and in charge of receivers)

from striking when the receivers should put into force an announced reduction of wages. There was much popular opposition to these injunctions, and it is doubtless fortunate for the public that the lower court was not upheld in its endeavors to prevent men from striking or to compel them to work.

A conspiracy in restraint of trade or commerce among the several States is made illegal by the antitrust law of 1890, and the obstruction of the mails is forbidden by Section 3995 of the United States Revised Statutes. The enforcement of these and similar laws is ordinarily accomplished by indicting and punishing those persons who may break the laws; but in extraordinary times, when a disregard of law is causing or threatening to cause loss of life, destruction of property, or serious public inconvenience, the courts may temporarily exercise their mandatory power of injunction to preserve order and insure the observance of the laws. This power was exercised by the Federal courts in a forcible and effective manner during the strike inaugurated at Chicago by the American Railway Union in July 1894, the so-called "Debs Strike."

On the 11th of May 1894 the employees of the Pullman Palace Car Company, at the town of Pullman, near Chicago, went on a strike. These Pullman employees were members of a large organization of railway men, the American Railway Union, whose president was Eugene V. Debs. On the 26th of June the Railway Union inaugurated a boycott against the Pullman Company by voting that no member of the union should handle Pullman cars. The purpose of this "sympathetic strike" was to tie up the railway business of the country, and thus to force the Pullman Company either to grant the demands of its striking employees or to agree to an arbitration of the grievances. The boycott had the effect of stopping the movement of passenger trains, and consequently the mails

into and out of Chicago, and at other places in the United States. At Chicago, violence, disorder, the destruction of property, and the loss of life followed soon after the strike began, and on July 2 the United States Circuit Court, Chief Justice Fuller presiding, issued an order enjoining Debs and the other officers of the American Railway Union, "and all other persons combining and conspiring with them," and "all other persons whomsoever," from in any way interfering with the movement of trains or the transportation of the mails over the 23 railroads entering Chicago. This injunction was disregarded, and in accordance with President Cleveland's orders nearly 2,000 of the United States regular troops were sent into Chicago between the 3d and 10th of July to assist the courts in enforcing their orders. The United States Marshal also employed about 5,000 deputy marshals. There were in addition to these the police force of the city of Chicago and the 4,000 Illinois State militia ordered on duty between July 6 and 11. President Cleveland ordered the Federal troops to Chicago without being requested to do so by the Governor of Illinois, the troops being sent "to protect Federal property, to prevent obstruction in the carrying of the mails, to prevent interference with the interstate commerce, and to enforce the decrees and mandates of the Federal courts." The strike was broken by the exercise of military force and by the arrest and imprisonment of the leaders of the strikers, particularly the officers of the American Railway Union. These officers were attached and imprisoned on the 13th of July for contempt of court in disobeying the injunction issued July 2. This action of the Federal Circuit Court was sustained by the Supreme Court, to which appeal was made by Mr. Debs and the other officers of the American Railway Union.

The courts made such large use of their power of injunction to intervene in labor controversies of all kinds that

popular indignation was often aroused. Labor organizations long demanded legislation which would limit somewhat the activities of the courts, and due to their demand, and also to the insistence of many other organizations and individuals who felt that the courts had often gone too far in the exercise of their power of injunction, Congress included in the Clayton Antitrust Act of 1914 certain provisions for the regulation of the use of injunctions in labor troubles. The chief rules of the law governing the use of such injunctions are:

1. No preliminary injunction may be issued without notice to both parties.

2. No temporary restraining order may be granted without such notice unless it appears that an immediate and irreparable injury will result to the applicant before a hearing can be held. Such temporary orders expire in ten days, but may be renewed for good cause. Any party served with a restraining order issued without notice may, upon two days' notice to the applicant, appear before the court and ask for the dissolution of the order, and a hearing must then be had.

3. Every restraining order or injunction must set forth fully the reasons for its issuance and indicate with reasonable definiteness the acts restrained.

4. No injunction or restraining order shall be issued in labor controversies unless necessary to prevent irreparable injury to the property of the applicant, for which injury there is no adequate remedy at law.

5. No injunction shall prohibit a strike, peaceful picketing, advising others to strike or boycott, assembling for peaceful purposes, or payment of strike benefits.

6. Disobedience of a restraining order or an injunction, if the act also is a criminal offense against Federal laws, shall be punished as contempt of court only after a jury trial if the defense demands it, except that contempt com-

mitted in the presence of the court or disobedience of an order or injunction in a suit brought by the United States may be punished without a jury trial.

7. No action can be brought against a person for contempt unless begun within a year from the time of the act complained of.

This law gives to strikers and others engaged in labor disputes ample protection against overhasty action by the courts, but at the same time it permits the courts to make use of their powers of injunction when necessary. The injunction, properly used, is an extremely powerful weapon for social defense; only its misuse has caused it to be looked upon as an instrument of oppression. There are many cases of emergency in which it is the only means available of preventing acts of violence and disorder, which, if not anticipated, would occasion loss of property and life, which no action at law could replace.

Railway Receiverships

When a railroad company becomes insolvent—when it cannot pay the interest on its debt or meet its other financial obligations—the creditors of the road may ask a court to take possession of the property. If the court grants the request of the creditors, the property is taken from the management of the directors and officers of the company and put in charge of an officer of the court called the receiver. If the company is not hopelessly insolvent the road will be operated by the receiver, who will coöperate with the creditors and the owners of the road in reorganizing the company and placing it on a solvent financial basis. If, however, the liabilities of the company are found to be so great as to make impossible a return to solvency by means of reorganization, the court will instruct the receiver to sell the property for the benefit of the creditors; but whether the property is sold or not every effort will be

made to keep the railroad in operation, because the value of the property invested in a railroad depends almost entirely upon what it can earn as a railroad. It cannot be used for other purposes.

The foreclosure suit which the creditors institute against an insolvent railroad is seldom instituted to compel a sale of the property; indeed, the owners of the junior liens and the stock of the company are usually willing to make considerable present sacrifice to prevent the disruption of the property, because a reorganization of the company makes it possible for the subordinate liens and the stock to become valuable in the future. In order to secure the funds temporarily required to operate the road and to rehabilitate the property, the receiver borrows money by the sale of certificates which constitute a first claim on the property, outranking even the first-mortgage bonds. While the receiver is improving the property with the capital thus obtained, and is increasing the earning capacity of the road, committees representing the financial interests concerned are at work on a plan of reorganization. This plan usually involves an assessment on the stock, and sometimes on the holders of the junior mortgages, and frequently requires the exchange of some of the bonds for stock and the displacement of some of the old bonds with a new issue bearing a lower rate of interest. The purpose of the changes is to reduce the capital charges so that the earnings of the road will be able to meet the fixed charges. When the court having control of the insolvent road is satisfied that a plan of reorganization has been worked out that will insure the solvency of the company, it accepts the plan and restores the property to the management of the stockholders. If the receivership has been successfully managed, the court has not only avoided selling the property under the hammer, but has put the road in a better condition for handling traffic. The total capitalization of the com-

pany may have been reduced, but that does not always occur; it has sometimes been found possible to reduce the interest and other fixed charges while actually increasing not only the stocks but the indebtedness of the company.

Usually in prosperous times most railroad companies are solvent, and the courts have charge of but a short mileage; but in times of severe business depression the courts have operated a surprisingly large part of the railway systems of the country. The business panics of 1873, 1885 and 1893 were notable for the number of railway receiverships occurring, and the years of business stagnation, beginning in 1912, were marked by a recurrence of railway insolvency. During the 18 months ending July 1, 1894, 43,000 miles of railroads—24 per cent of the total mileage of the country—were taken in charge by the courts. In some instances the duration of the receivership was only for a few months, but in other cases the roads were under the control of the courts for several years. From November 1893 until November 1896, the number of miles of railroad in charge of receivers was at no time less than 20,000 miles, the maximum number of miles at any one time being 40,818. It was not until the spring of 1899 that the total mileage in the hands of receivers became less than 10,000. After that year the railroads became much more prosperous. On June 30, 1906, only 34 roads in the United States, with a total mileage of 3,971, were being operated by receivers. There was an increase to 10,000 miles during the depression in 1907-08, but the prosperous year of 1910 witnessed a reduction of the amount to less than 6,000 miles, and by June 30, 1911, the number of miles operated under supervision of the courts had declined to 4,593. On June 30, 1912, the mileage in the hands of receivers was 9,786, and it continued steadily to increase until in the summer of 1915 it amounted to approximately 42,000 miles, or nearly 15 per cent of the mileage of the entire country. On January 1, 1916, the

number of miles in bankruptcy was 38,661; the par value of the stock issued by the companies which had controlled these lines was $747,004,801, and the bonded indebtedness $1,607,895,500.

The large number of railroad receiverships in the United States has been the result of several causes, of which the first and most potent has been overcapitalization. In many instances the original investment for the construction and equipment of the railroad represented but little more than the amount of first-mortgage bonds. The junior liens were frequently sold at a great discount, and the stocks were distributed as a bonus to the purchasers of the bonds. The securities other than the first-mortgage bonds were used as the inducement by which men were influenced to invest in the enterprise. The value of the stock and, to a large extent, of the junior liens depended on the growth of the traffic of the railroad. Many roads were highly prosperous almost from the start, and rapidly gave actual value to the fictitious capital. Other companies were not so fortunate. They found that their system of roads had been extended more rapidly than the growth of the country demanded, or that the completion of their lines was followed by a business depression which cut down their anticipated traffic and increased the difficulty of financing their enterprise, or they found that some other company followed them closely with a new and rival line. During the years from 1868 to 1873, and from 1880 to 1885, railways were constructed with great rapidity, particularly in the central and far western sections of the country, and the tendency toward overcapitalization and speculation was excessive. Many companies found they had overestimated the future increase in their traffic, that competition became keener and rates declined faster than had been expected. The result was insolvency and the temporary management of the roads by the courts. Some railroads

were built almost entirely for speculative purposes by persons whose object was to profit from the construction of the road. Such speculators built the line entirely with borrowed capital, made large sums from the construction contracts, and then permitted the insolvent road to pass into the hands of the security holders.

The increase in the number of railway insolvencies beginning in 1912 was not due so much to overcapitalization by railway builders as to other causes. One reason for the unusually large mileage in the hands of receivers was that at least two extensive systems—the St. Louis and San Francisco, and the Chicago, Rock Island and Pacific—comprising nearly 14,000 miles of line, or more than one-third of the mileage in the charge of the courts, were wrecked by the financial mismanagement of their officers and directors.[1] The receiverships which overtook several other lines, among which were the Père Marquette and the Wabash, were likewise due in a large measure to unwise and ill-considered financial operation; moreover, it was a noteworthy fact that, with few exceptions, the important systems in the control of receivers were located in the Southwest, a district long notorious for the speculative character of the management of its railways. In large part, however, the distresses of the railroads following 1912 were due to the falling off in the volume of traffic, which invariably accompanies a business depression, to the great increase in operating expenses occasioned chiefly by increases in wages and taxes and higher costs of materials and supplies, and to the inability of the railroads to raise their rates until they had secured the permission of governmental authorities in whose control the regulation of rates was vested.

[1] *I. C. C. Reports* XXIX, 139; XXXVI, 43. See also E. R. Dewsnup, "Recent Financial Investigations by the Interstate Commerce Commission," in *Annals of the American Academy of Political and Social Science*, LXIII, January 1916, pp. 199-214.

It is fortunate for the country that railways are not now so frequently projected ahead of business needs and that it has become more difficult for a new company to enter a field already occupied. There is also noticeable an increase of conservatism in railway financiering as the corporations become older and larger. The opportunity for the irresponsible speculator has been greatly narrowed, although, unfortunately, he has not been driven entirely from the field. The tendency toward overcapitalization is not so general as it was a few decades ago, though it seems still to be practiced, or else one must conclude that the same results that follow overcapitalization have been obtained through the improper manipulation of the securities of solvent lines. Railroads need the confidence of the public if they are to prosper. Unfortunately, the public does not usually discriminate between those railroads which deserve its confidence and those which do not, and it is for this reason, more than for any other, that the railways as a whole have not been accorded as generous treatment in recent years as they formerly received. When the speculator is driven from the railway business and cases of gross mismanagement become less frequent and less conspicuous, railway credit will be greatly strengthened both through the increase of public confidence and because of the improved methods of financial management of the railroad companies themselves.

It has been urged against the present system of railroad receiverships that they impose on the courts duties with which the judges are ordinarily not prepared to deal; that they confer on the judges too great power and too much patronage; that our present methods of reorganization of an insolvent company do not cure the evil of stock watering; and that reorganizations under the present plan are unduly expensive. Much, moreover, is made of the fact that the proceedings for receiverships

are frequently instituted by the directors of the companies, or those friendly to them, for the purpose of protecting themselves against the real creditors of the company. It frequently occurs that when the directors or officers of a road see that the company is threatened with insolvency they will apply to a court for the appointment of a receiver. In making the application the officials usually suggest one of their own number, often the president of the company, as the person they would like the court to select for the receiver, and as the judge knows he must secure the services of someone who is familiar with the affairs of the road, he is usually disposed to appoint the person recommended by the applicants. The term "friendly receiverships" has been applied to such a proceeding, and the practice is open to the objection of continuing in virtual control of the road the very person or persons under whose management the company has become insolvent. While the company is in the hands of the receivers it does not have to pay interest on the bonds, and money for the improvement of the road can be borrowed by the sale of certificates. As Prof. Henry C. Adams has said,

> the law of receivership was originally intended for the protection of the creditor; but it has been used . . . as a means of carrying the management of large properties through a period of general commercial depression without fear of interference from creditors or from interested parties ambitious of control.

To prevent the objectionable results of friendly receiverships it has been suggested that a law should be enacted stipulating that the first receiver appointed by the court should be a temporary appointee, and that the permanent receiver should not be selected until after the creditors of the company have had an opportunity to be heard. Some persons have advocated the establishment of a special

Federal court for the management and reorganization of insolvent railroads. The judges in a special court would become experts, and as there would be but one court there would be no conflict of jurisdiction between different courts. It would be to the advantage of the existing courts to relieve them of the management of railroads. In times of prosperity the need for a special court is not especially urgent, but in periods such as that following 1873, or 1893, or 1912, when the number of applications for receiverships is very large, it would probably be of distinct advantage for the business to be looked after by a special Federal court.

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CHAPTER XXXI

THE PROBLEM OF GOVERNMENT OWNERSHIP AND GOVERNMENT REGULATION IN THE UNITED STATES

The twofold nature of the problem of government regulation, 563. The two methods of government control, 564. Government ownership a question of expediency, 565. The experience of one country not necessarily a safe guide of action in another, 566. Should the United States adopt a policy of government ownership? 567. Probable effect of such a policy upon the railroad service, 567. Probable effect upon rates, 569. Socialization of rates and fares possible under government ownership, 571. Effect of government ownership on politics and government, 572. The success of government regulation in the United States, 573. Need for a constructive policy, 575. References, 577.

THE problem of the government regulation of railways varies in its concrete manifestation from time to time, but the general problem is a permanent one. There are two parts to this permanent problem of government regulation of railroad transportation, two duties devolving upon the state. One is to adjust the relations of the carriers with each other; the other is to maintain an equitable relationship between the public and the carriers. The aim sought by the carriers is an increasing business at rates that will yield as large profits as can be obtained without interfering with the growth of traffic; the interests of the public served by the railroads require that the service shall be progressively efficient, that the charges shall be as stable as general business conditions warrant, and shall be neither unreasonably high nor unjustly discriminatory as between

persons, places, or kinds of traffic. It should be the duty of the government (1) so to adjust the relations among the railroads that they are protected from unrestricted competition, but at the same time so to supervise their coöperative activities that they may not make an unjust use of their quasi-monopoly privilege, and (2) so to adjust the relations between the carriers and the public that adequate service is provided at equitable and reasonable rates.

When railway transportation was in its earliest stage of development it was believed that the interplay of competitive forces and the struggle of rival interests would result in an equitable and satisfactory adjustment of the relations of the carriers with each other and with the public, but this belief was not borne out by experience. The history of railway transportation in all countries shows conclusively that the solution of the various phases of the railway problem cannot be accomplished without the interference of governmental authority in one way or another.

The twofold problem presented to the government by the railway business may be dealt with in either one of two ways: the government may own and operate the railroads or it may intrust the business to private corporations and regulate by law the services and charges of these companies. The former method has been followed to a greater or less extent by the majority of countries, but the United States and in general the countries of North and South America have adopted the plan of private ownership and government regulation. Because of the very large mileage of railways in America, where private ownership has generally prevailed, the mileage of privately owned roads in the world is considerably greater than the state-owned mileage, but, excluding the railways of America, the mileage of roads owned and operated by government authority is greater than that controlled by private agencies.

Mileage of railways of the world owned by governments and by private corporations, 1911–1912

Continent	State	Private	Total	Percentage, State	Percentage, private
Europe	107,663	99,632	207,295	51.9	48.1
America	12,190	314,693	326,883	3.7	96.3
Asia	36,710	26,581	63,291	58.0	42.0
Africa	11,478	11,412	22,890	50.1	49.9
Australia	18,027	1,235	19,262	93.6	6.4
Total	186,068	453,553	639,621	29.1	70.9

The question as to whether the more satisfactory method of dealing with the railway problem is by government ownership or by private ownership and government regulation has given rise to much controversy. Before entering upon any discussion of the relative merits of these two methods of railway control it may be well to say that the question is, for most people, not a matter of principle but solely a matter of expediency. This is not true for all persons, however, inasmuch as socialists, and others who believe in the ideas which socialists have with respect to the relation of the government to productive industry, look upon the question entirely as one of principle. To them government ownership of railways is a part of an accepted political program, and no argument as to expediency in particular cases would be likely to induce them to abandon the general principle involved. Most people, however, believe that the government should interfere with individual economic activity only to the extent that is necessary for the protection of the interests of society as a whole, and among such people the question of government ownership of railways is merely one of expediency. All will admit that the development of the railway business in every country has given rise to difficulties which have made necessary the interference of the government. Whether this in-

terference should proceed to the extent of nationalization of the railways depends upon whether the railway problem in particular cases can be solved best by such a program, and whether the general interests of society would be best served by the adoption of such a plan.

It must be borne in mind too in the discussion of this problem that the experience of one country is not necessarily a safe guide of action for the people of another country. The fact that government ownership has proved successful in Prussia is no reason for believing that it would prove successful in the United States, and the fact that private management failed in Italy offers no safe ground for the conclusion that it would have failed in Prussia. Each nation has its own peculiar social, economic and political conditions and the problems of each nation must be worked out on the basis of experience and with reference to its particular conditions of national life. For this reason it cannot be assumed that either method of railway control is the better method for all countries, nor can it be said with certainty that the time will ever come when all countries will adopt the same means of dealing with the railway problem.

One thing, however, which seems reasonably certain, is that no country will find it permanently advantageous to have both private and government operation of railroads within the same region. The dual system of private railroads and government lines has been shown by the experience of European and other countries to be impracticable. Private ownership and government regulation have been found to work successfully in certain countries; likewise government ownership and operation have proven satisfactory in a number of countries; but the lesson of experience is that the success of government ownership depends upon the complete nationalization of railroads and upon the management of the nationalized system with refer-

ence to the furtherance of clearly defined political and economic ends.

There are many persons who believe that as a matter of expediency the Government of the United States should acquire and operate the railroads of the country. Would it be wise for the people of the United States to bring about the adoption of this policy? In seeking for an answer to this question the point of chief importance to keep in mind is that the primary interest of the public in the railways is to secure adequate service at rates which are reasonable and equitable; and consequently the first questions to consider are: Would the railways, if owned by the government, offer as adequate service as when operated by private agencies? And would the rates be any more nearly just and equitable?

The adequacy of the service which railways offer depends upon the progressive improvement of all the railway equipment and upon the efficiency with which the lines are operated. If the Government of the United States owned the railroads, presumably the appropriations for improvements and extensions of the service would be made by Congress. When one considers the way in which public money has been distributed in the past for such purposes as the improvement of waterways and the construction of public buildings, there is small ground for hope that expenditures for railway improvement would be made economically or distributed wisely. It would be virtually impossible to prevent the appropriation of money for improvements, the chief purpose of which would be to cause the expenditure of government funds in certain districts. Political considerations might too often have more weight than the needs of the railways, and the leaders of the political party in power might insist that railway improvements should be made where they would be of most advantage to the party.

Moreover, there are few who believe that the operation of the railways by the government would be as efficient as operation by private corporations. The stress of competition which acts as a constant incentive to greater efficiency in private business is absent in the administration of government affairs. While it cannot be said that either railway transportation or any other kind of productive activity in the United States has been carried on with as high a degree of efficiency as is possible and desirable, yet the administrative capacity displayed by government officials usually suffers in comparison with that of the officials of leading business corporations, and certainly there has been more rapid progress and improvement in the conduct of private business than in the conduct of the affairs of the various governmental agencies of the United States.

One way in which the efficiency of the railways would suffer under government ownership would be through the employment of a less capable and effective force of laborers and officials. Though most employees would be chosen by means of competitive tests under civil service rules and regulations, yet the temptation for political leaders to reward "deserving" members of their parties with official positions would probably be too great to be resisted; and either the railway service would be intrusted to the supervision of incompetent officials, or a large number of sinecures would be created for favored individuals, who would receive pay for the work done in a large measure by others much more worthy of recognition. The present methods of selecting high-salaried postmasters and of choosing thousands of other employees and officials of the Federal, State, and local governments show that ability and fitness are only too often not given substantial consideration in appointments and elections. That it would be possible, under the present system of government in the United States, to eliminate

the political "spoils system" from a government railway service is difficult to believe.

With regard to rates, the adherents of the policy of government ownership claim that the government could avoid the expenses due to competition and to the maintenance of a large number of corporations, and that inasmuch as the government would not seek to make a profit out of the operation of the railroads, it would, therefore, be able to charge lower and more "reasonable" rates than are charged by the private corporations. Though the government would be forced to go heavily into debt to purchase the existing systems, yet the rate of interest it would have to pay would be so low that, if the government continued to exact the rate of return now secured by the railroad companies, it would have not only enough to pay annual interest charges, but a surplus to contribute to a sinking fund by which the debt eventually would be extinguished. In this way there would be for a long time a constant and progressive reduction in rates.

In such a calculation as this, however, it is assumed that operating expenses would be no more in proportion to operating revenues than they are when the railways are privately owned, that is, that the operation of the railroads by the government would be equally as efficient as operation by private corporations and that wages, costs of supplies, and other expenses would be equally as low under state as under private management. As has already been said there is good reason to doubt that the government would maintain the degree of efficiency reached by private corporations. Moreover, it is a well-known fact that the government usually pays higher wages and exacts shorter working days than do the private corporations. However desirable this might be from a social point of view, the fact would remain that it would probably cause an increase in operating expenses sufficient to prevent any decrease in rates;

in fact the increase might make it necessary to charge higher rather than lower rates.

It is by no means certain that government operation would prevent discrimination in rates. Here again the influence of political considerations and the dominance of certain groups of economic interests would have telling effect. The history of tariff legislation in the United States reveals a continuous struggle among rival industrial interests and among different geographical sections for preferential treatment in the determination of import duties. If the nation is unable to apply scientific methods to tariff legislation, it is useless to suppose that a method of fixing railroad rates would be established in which satisfactory consideration would be given to all the varied economic interests of the country.

In considering only the questions of service and charges it is difficult to avoid the conclusion that government ownership would be an unwise policy. There are, however, certain features of the problem of railway transportation, other than the question of service and rates, which must be taken into account in weighing the advisability of government ownership of railways in the United States. One admirable feature of government ownership would be that the more or less speculative stocks and bonds of railway companies would be converted into sound investment securities. Railway securities would take the form of government bonds in which individuals, insurance and trust companies, and banks might safely invest surplus funds. It is certainly desirable that some method be devised to prevent such needless destruction of the value of securities as has been witnessed in recent years in connection with the management of the New Haven, the Rock Island, and other railroads. The removal of railway securities from the field of speculation would unquestionably be one of the commendable results of government ownership.

It would be possible, if the railways of the United States were nationalized, to fix rates and fares with regard to the promotion of social progress. Under private management rates and fares are determined almost entirely by business considerations, and even when the government establishes "reasonable" rates and fares, which railroad corporations are required to observe, consideration is given chiefly to the cost of the service to the railroads and to the value of the service to the shippers, and seldom, if ever, to the social and economic needs of the nation as a whole. In foreign countries where state ownership prevails, passenger fares have been arranged with reference to increasing travel for educational purposes and to relieving the congestion of population in urban districts, freight rates have been adjusted to promote certain lines of economic development, and railroads have been constructed in furtherance of particular national policies of military defense or aggression. In the United States the primary objects kept in view in the determination of railway rates and fares have been the necessary income of the railroads and "what the traffic will bear." The general welfare of society, except as it has been affected by these considerations, has been given but little thought.

It must be said, however, that in attempting to adjust freight rates for the purpose of promoting and encouraging particular industries, there would be an inevitable clash of interests which would, in all probability, result in discriminations against the less powerful. Discriminations of this sort exist in Germany, and they would be even more likely to occur in the United States. The selection of the industries to be favored would be a political question, and while the choice might be that of the majority of the people, the resulting discrimination would not, for that reason, necessarily be just. Attempts to socialize passenger fares under government ownership would in all probability produce

much better results than attempts to socialize freight rates.

In dealing with the question of government ownership of railroads one must consider not only the effects which the adoption of such a policy would have upon the transportation business and its relation to the public, but must also look for the probable effects which the change would have upon politics and government. One of the immediate results of nationalization would be the increase in the number of government employees by nearly two million, most of whom would be voters. An effective organization of such a large number of voters would be able to exercise an overwhelming influence upon State and national politics. It might be said that such a statement would be equally true if the railroads were to remain under private management, but it must be remembered that the incentive to exercise political power would be much greater if the government were to have entire control of the railroad business. The history of past efforts to deprive the interests in control of the railways of their power to exercise an unwholesome influence in politics should be sufficient warning against creating a force which would be even more powerful and equally injurious to public morality. Conditions which make it possible for a particular interest to become the immediate and direct beneficiary of a legislative program are an invitation to attempts to secure political favoritism. A great deal of the corruption of politics in the United States in past years has arisen because special interests have sought to exercise an undue influence on legislation, and because political leaders have often followed a course intended to attract, and sometimes even to compel, the support of such interests.

Before one can finally dismiss as unwise the suggestion that the Government should own and operate the railroads in the United States, it is necessary to inquire whether

private ownership and regulation can show any better results than are to be expected should the policy of state ownership be adopted. Can the railway problem be solved by government regulation, and can it be solved without effects on the transportation service and the public equally as injurious as the effects which would probably follow railway nationalization?

The policy of railway regulation was inaugurated in the United States because the public served by the railroads was being subjected to unfair and discriminatory treatment by the railway companies. The railroad interests uniformly opposed all endeavors which were made to regulate their business by law, and it took nearly 20 years after the enactment of the Interstate Commerce law of 1887 for the Federal Government to establish a scheme of regulation by which adequate protection against unfair rates and practices was accorded to the general shipping and traveling public. It was during this period that government ownership of railways began to be discussed as the only possible means of escape from the situation. If it were impossible for the government to *regulate* the railways under private ownership, the only alternative was for the government to *own* them. Eventually, however, the task of supplying suitable machinery for regulation was accomplished, and the right and power of the government to protect the public from discriminatory and unfair treatment by the carriers was completely demonstrated. Adequate protection against improper rates was obtained by the laws enacted in 1903, 1906 and 1910. The legislation of those years was strengthened by the Transportation Act of 1920. Moreover, in the law of 1920 Congress gave the Interstate Commerce Commission the authority to regulate railroad capitalization, in furtherance of the policy of protecting the public interest against unfair railroad practices.

There is no doubt that the public can secure adequate

protection against unjust practices by the railroads as well by government regulation as through government ownership. Moreover, government regulation affords an effective means of correcting offensive discriminations and of preventing unduly high charges, without inviting the grave political consequences which would probably follow government ownership. In no important particular does government ownership offer advantages not now secured under government regulation, unless it be in the matter of the socialization of rates and fares. While an adjustment of rates and fares with a view to promoting certain social changes instead of for the purpose of meeting the financial needs of the carriers might be highly desirable in many respects, it is doubtful if the practice would compensate for the disadvantages which the policy of government ownership would entail.

But while government regulation has afforded an adequate means of protecting the public against unjust action by the railway companies, does it offer an effective solution of the other phases of the transportation problem which confronts the government? It must be remembered that this problem is twofold, involving the regulation of the relations between the carriers themselves and the regulation of the relations between the public and the carriers.

As has been pointed out in the chapters discussing railway regulation in the United States, the railway laws, both State and Federal, previous to 1920, were framed with the one idea of affording the public protection from the unfair methods employed by the railroad companies in adjusting charges and services. Laws for the regulation of the relations between the carriers and the public contained provisions designed to prevent the railroads from charging unduly high and discriminatory rates; little thought was given to the fact that in establishing equitable relations

between the carriers and the public, it was equally important that the carriers should not be prevented from charging rates which would provide an income large enough to permit the maintenance of efficient service and to invite the investment of new capital. In regulating the relations between carriers the early laws were framed to prevent combination and coöperation of competing lines, with the idea of protecting the public from monopoly; no recognition was given to the obvious historical fact that competition and not coöperation had been the source of the most important features of the railway problem, and that in the regulation of the relations among the carriers the greatest interest at stake was that of the carriers and not of the public. In a word, the point of view of those who framed the laws for the regulation of railroads in the United States before 1920 was one-sided; it was this fact which caused most of the confusion, complexity and inadequacy of the former methods of regulation.

It must be said, however, that there was much justification for this point of view. As long as the railroad interests strenuously opposed the efforts made to correct conditions which were obviously a source of injustice, there was unquestionably a need for regulation directed *against* the railways. There can be no doubt whatever that the most vital phase of the railway problem in the United States has been the need of compelling the carriers to accord just and equitable treatment to all their patrons. It was apparently forgotten that there were other factors of the problem. These forgotten factors eventually came to occupy the position of chief importance in the railroad problem. The failure of legislators to grasp the problem of railway regulation in its entirety resulted in the enactment of laws based upon false theories and in the adoption of methods of regulation, the value of which was open to serious question. The passage of the Transportation Act in 1920 was a be-

lated recognition of the inadequacy of previous legislation. This law should do much to remove the objections to the former railroad policy.

While it seems clear that government regulation rather than government ownership is to be, and ought to be, favored in the United States, it is equally apparent that the past methods of regulation have not been entirely satisfactory. Whether the policy embodied in the Transportation Act will prove adequate to the needs of the country remains to be seen. In other words, public regulation is still on trial, and until it proves completely successful, the alternative of government ownership, regardless of its consequences, it not impossible. The fact of pressing importance is that adequate railway transportation is absolutely necessary to the prosperity of the country, and if it cannot be obtained under private ownership other methods must be tried. If government regulation retards railway progress or results in retrogression rather than advance, either it must be modified and adapted to suit the needs of the country, or private ownership of railways must be discontinued. It is most unlikely, however, that government ownership will come in the near future.

Government regulation has by no means been a failure. It has accomplished a great amount of good, but it has not been an unqualified success. Congress, in its recent legislation, has shown a disposition to work out a constructive policy which will permit the continuance of private ownership under conditions in which the interests of both the public and the railroads will be properly conserved. The retention of private ownership, under adequate regulation, seems a far wiser policy, at least for the immediate future, than for the Government of the United States to attempt the enormous and even dangerous task of purchasing and operating two-fifths of the railway mileage of the world.

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QUESTIONS AND TOPICS IN
PRINCIPLES OF RAILROAD TRANSPORTATION

QUESTIONS AND TOPICS IN

PRINCIPLES OF RAILROAD TRANSPORTATION

I

INTRODUCTION—DEFINITION AND SCOPE OF TRANSPORTATION

1. Define transportation.
2. Distinguish the transportation system from the service.
3. The three purposes of the study of the transportation service.
4. Define transportation economics.
5. Define economics or political economy.
6. How may the place of transportation economics in political economy be explained?
7. Define production, intrinsic utility, place utility.
8. Justify the statement that transportation is a part of the process of production.
9. Explain how production is influenced by consumption.
10. How is the consumption of wealth affected by transportation development?
11. Define commerce, and state the relation of transportation to commerce.
12. Of what three factors is wealth the product? What is the income from each factor?
13. What two kinds of rent are there? Which is determined by transportation facilities?
14. What is the twofold relation of transportation development to interest?
15. How does transportation development affect real wages?
16. What transportation facilities are provided by the government?
17. Is the railroad company a public corporation or a private corporation? Is its service of a public or a private nature?
18. What is meant by "a service of a public nature"?
19. In what sense is the study of transportation a part of the study of political science?

II

ORIGIN OF THE AMERICAN RAILROAD

1. Development of Highways

1. Why did highway improvement come later in the United States than in Europe?
2. What local governments constructed the early highways in New England? In the middle States? In the South?
3. Why were toll roads called "turnpikes"?
4. When did turnpike companies begin road construction? What is a turnpike company?
5. Give an account of the Lancaster Pike.
6. The extent of turnpike construction in Pennsylvania.
7. Give the history of the Cumberland Road or National Pike.
8. Why did the Federal Government stop constructing and later stop aiding road building?
9. When did the States take up the work of road building?
10. Why did the States abandon highway construction?
11. The "good roads" movement beginning about 1890.
12. Present highway policies of the States.

2. Development of Inland Waterways

13. Beginning of the agitation for improvement of waterways; Washington's connection therewith.
14. The two purposes of early canal systems: (a) to connect anthracite coal fields with the seaboard; (b) to connect the Atlantic seaboard with the Great Lakes and Ohio River.
15. The anthracite tidewater canals: Lehigh Navigation; Delaware Division Canal (Bristol to Easton); Schuylkill Navigation; Delaware and Hudson Canal (Honesdale to Rondout); Morris Canal (Easton to New York Harbor); Delaware and Raritan Canal (Bordentown to New Brunswick); Susquehanna and Tidewater Canal.
16. The canals connecting the East and the West: Erie Canal and other New York canals. Pennsylvania public works. Chesapeake and Ohio Canal.

3. Origin of the Railroad

17. The industrial revolution inaugurated by the locomotive.

18. The Quincy tramway.
19. The invention of Stephenson's "Rocket." The two mechanical features that made the Rocket a success.
20. The beginning of the Baltimore and Ohio Railroad.
21. Beginning of the New York Central.
22. The Camden and Amboy, and the Philadelphia, Wilmington & Baltimore.
23. The early lines in New England.
24. The Charleston and Hamburg Railroad.
25. The Columbia Railroad.
26. The origin of the Reading Railway.
27. Discuss the relative value of highways, waterways, and steam railroads as means of transportation.
28. Would it be a wise policy for the United States Government to construct a comprehensive system of artificial waterways in the territory east of the Mississippi River?

III

GROWTH OF THE AMERICAN RAILROAD NET

1. Reasons for studying the railroad net.
2. Where were the railroads of the first ten years of construction located? Cities from which they radiated.
3. Characteristics of the period of 1840 to 1850:
   a. Slow growth from 2,818 to 9,021 miles. Reasons.
   b. Most construction still along the Atlantic.
   c. Beginning in the middle West.
   d. Feasibility of railroads as freight carriers not fully recognized.
   e. Advance of technical knowledge not rapid during the decade.
4. The period from 1850 to 1860:
   a. Rapid growth from 9,021 to 30,626 miles.
   b. Reasons for rapid growth: (1) An era of industrial growth; (2) westward expansion; (3) larger use of farm machinery; (4) California gold discovery; (5) public land grants; (6) a decade of speculation.
   c. Where was construction most active?
   d. Beginning of railroad consolidation.
   e. The consolidations by which the New York Central system was established.

f. Early history of the Pennsylvania Railroad.

5. Period of the Civil War to 1890:
   a. Where was the bulk of railroad construction?
   b. Great rapidity of construction from 1868-1873 (28,000 miles) and 1880-1890 (90,000 miles).
   c. Interruption caused by panic of 1873.
   d. Large Federal land grants.
   e. What was the effect of government land grants?
   f. What and when was the first transcontinental railroad constructed? Reasons for the building of this line. Difficulties encountered.
   g. Atchison, Topeka and Santa Fé.
   h. Northern Pacific.
   i. Great Northern.
   j. Other transcontinental lines.
   k. Construction in the South.
6. Period 1890 to 1900. What were the reasons for the decreased rate of construction?
7. Construction since 1900.
8. How does the mileage in the United States compare with that in Europe?
9. How does the capital invested in railroads compare with that of other industries?
10. What will be the probable trend of future railway construction in the United States?
11. Why is railroad construction more expensive now than in former years?

IV

THE MECHANISM OF THE RAILROAD—DEVELOPMENT OF TRACK AND LOCOMOTIVE

1. Early track construction in the United States.
2. The development of the railroad rail:
   a. Form and material.
   b. Weight and length.
   c. Methods of manufacture.
3. The railroad crosstie:
   a. Leading kinds of wood used.
   b. What has prevented the extensive use of metallic ties?
   c. Leading methods of tie preservation.

4. Ballast: purpose; chief materials.
5. Early history of the locomotive in the United States.
6. What were the chief early improvements in locomotives made by American inventors?
7. The American type of locomotive.
8. The development of other types.
9. Classification of locomotives.
10. What are the leading types of locomotives used in freight service? In passenger service?
11. What are the advantages of the compound locomotive?
12. Why has the compound locomotive not been used extensively in the United States?
13. The superheater.
14. The weight of modern locomotives.
15. What are the chief advantages of heavy locomotives?
16. What types of locomotives are used for freight and passenger services on the railroads with which you are most familiar?
17. Why are switching locomotives usually constructed without truck wheels?

V

THE MECHANISM OF THE RAILROAD (*Concluded*)—THE CAR, TERMINAL AND OPERATION

1. The development of the passenger car.
2. Leading types of passenger cars.
3. Advantages of the steel passenger car.
4. The development of the air brake.
5. The development of the freight car.
6. How are freight cars specialized?
7. What are the advantages of large freight cars?
8. What are the essential parts of a passenger terminal?
9. The chief features of a passenger station:
    a. Train shed and tracks.
    b. Concourse.
    c. Waiting rooms.
    d. Ticket and baggage offices.
10. The freight terminal:
    a. Freight houses, team tracks, industrial sidings.
    b. Freight yards.
    c. Transfer house.

11. Locomotive terminal facilities.
12. The electric telegraph and train operation.
13. The science of signaling.
14. The substitution of electricity for steam as motive power on railroads. In what fields of steam railroad service can electricity be most advantageously used as motive power?
15. Why is the problem of electrification of steam railroads likely to become of great importance?
16. What influence have specialized freight cars had on economic development in the United States?
17. How do European passenger cars differ from those used in the United States?

VI

THE PRESENT RAILROAD SYSTEM OF THE UNITED STATES

1. Into what three and into what seven territorial groups may the American railroad system be divided? What are the characteristics of each?
2. What is meant by "community of interest" and what is its effect?
3. What are the leading purposes of consolidation?
4. What are the leading methods of consolidation?
5. Where and what are the leading constituent lines of the Vanderbilt system?
6. Where and what are the leading constituent lines of the Pennsylvania system?
7. Where and what are the leading constituent lines of the Morgan system?
8. Where and what are the leading constituent lines of the Hill system?
9. Where and what are the leading constituent lines of the Union Pacific-Southern Pacific system?
10. Other leading railroad systems.
11. What relation is there between the consolidation of railroads and the territorial groups?
12. Present tendencies in railroad consolidation.
13. What are the two methods of measuring the supply of railway facilities?
14. How do the railroad facilities of the United States compare with those of Europe?

15. Is the United States adequately supplied with railroad facilities?
16. Would it be a wise policy to permit complete territorial consolidation of railroads?

VII

THE RAILROAD CORPORATION AND ITS CHARTER

1. Define a corporation.
2. Distinguishing features of a corporation; a partnership; a limited partnership; a joint-stock association.
3. Organization and officers of the corporation.
4. Distinction between the private and the public corporation.
5. The railroad company is a private corporation created to perform a service of a public nature—i. e., the railroad company is a quasi-public corporation.
6. How does Elliott characterize a railroad corporation?
7. The services and charges of all transportation companies are subject to public control. The reasons why this is necessary.
8. The legislative power of the States over railroads.
9. The power of the State courts over railroad charges.
10. The legislative power of the United States over railroads.
11. The scope of the power of the Federal courts over railroad charges.
12. The extension of the powers of the Federal Government resulting from the regulation of railroads.
13. What is a charter? What powers have the United States and the States, respectively, to charter railroad companies?
14. Early efforts to regulate railroads through charter provisions, and results.
15. What is "the railway question"? What accounts for the existence of this question?
16. Is compulsory Federal incorporation of railroads desirable?
17. The distribution of the shares of railroad corporations in the United States?
18. Account for the fact that the control of railroads is being steadily concentrated in the hands of a small number of men, while the holding of shares is being more widely distributed.
19. When is a railroad insolvent?
20. What are the aims sought to be accomplished by placing a railroad in the hands of a court?

21. What are "friendly receiverships"?
22. Which type of business organization is most suitable for conducting the railroad business? Why?

VIII

RAILROAD CAPITAL

1. Define railroad capital and state why bonds are included?
2. What are the various classes of railroad bonds. Define each.
3. What are the various classes of railroad stock? Define each.
4. What is the extent of American railroad capital at present?
5. To what extent are railroad securities distributed among the investing public?
6. How does the capitalization of railroads in the United States compare with that of British railroads? Why?
7. What is "watered stock"?
8. What are the motives for stock watering?
9. What are the methods of stock watering?
10. What is the work of the railroad promoter?
11. What is the work of the security "underwriter"?
12. What are the objections to stock watering?
13. Discuss the various views as to the proper basis for railroad capitalization.
14. How is railroad capitalization regulated in Massachusetts, New York, and Pennsylvania?
15. What ought to be the policy of the States as regards the regulation of the issue of railroad bonds and stock?
16. The report of the Hadley Commission upon Federal regulation of railroad securities.
17. Federal regulation of railroad capitalization.
18. Give an account of the financial history of some railroad.

IX

EARNINGS, EXPENSES AND DIVIDENDS

1. What are the railroad company's sources of revenues?
2. What share of total revenue is derived from passenger service? From freight service?
3. What are the principal classes of operating expenses?
4. Show what calculations must be made to ascertain the net income of a railroad.

5. Income statement of the railroads considered as a single system.
6. The ratio of operating expenses to income from operation, or the operating ratio. Its significance.
7. Why do a third of American railway stocks yield no dividends?
8. Compare and explain the curves of fluctuations in freight revenue and operating expenses. (Chart.) Also the curves of gross earnings from operation and net income available for dividends.
9. Growth in freight train load since 1898.
10. Growth in volume of traffic during same period.
11. Freight rates since 1898.
12. Effect on the prosperity of railroads of increased efficiency in operation, of growth of traffic, and maintenance of rates and fares.
13. Recent relationship between gross earnings, expenses and net income.
14. Read the income statement of a particular railroad. What is the operating ratio of the road?

X

THE FREIGHT SERVICE—FREIGHT CLASSIFICATION

1. Why is the freight service of greater economic and social importance than the passenger service?
2. Statistics of freight service for year ———:
   a. Total tons reported ———.
   b. Less duplications ———.
   c. Ton-mileage ———.
   d. Number of freight cars ———.
   e. Freight and switching locomotives ———.
3. Character of freight traffic for year ———:
   a. Products of agriculture —— per cent.
   b. Products of animals —— per cent.
   c. Products of mines —— per cent.
   d. Products of forests —— per cent.
   e. Manufactures —— per cent.
   f. Merchandise —— per cent.
   g. Miscellaneous —— per cent.

4. What is meant by "freight classification"? Why is it necessary?
5. Discuss the origin and development of classifications.
6. Name the three leading freight classifications of the United States and indicate the territory in which each is used.
7. The minor classifications.
8. The consolidated classification.
9. Why is the number of "ratings" larger than the number of items?
10. Why do goods shipped in carload quantities receive lower ratings than when shipped in less-than-carload quantities?
11. What is meant by "carload minimum"? What is the general carload minimum in each of the great classification districts?
12. Who makes the freight classifications?
13. What are some of the factors which determine the classification of an article?
14. What is a "commodity tariff"?
15. What is meant by "uniform classification"? Discuss the work of the uniform classification committee.
16. The railroads of Great Britain have a uniform classification. Why has it been impossible to secure uniform classification in the United States?
17. Distinguish between "local" and "interline" freight.
18. Distinguish between "class traffic" and "commodity traffic."
19. How does a freight agent ascertain the rate for a particular shipment of traffic?

XI

THE FREIGHT SERVICE—BUSINESS ORGANIZATION

1. Freight shipping papers:
   a. Bills of lading: straight, order, export, live stock, contract.
   b. Waybills: local, interline, card.
   c. Arrival notice, delivery receipt, freight bill.
2. What is the extent of a railroad company's liability for lost or damaged freight?
3. Describe the system of "unit billing."
4. Describe in detail how a freight shipment is cared for from shipper to consignee.

5. What is "fast freight"?
6. Demurrage, track storage charges, reciprocal demurrage.
7. Give an account of the origin and development of "fast freight lines."
8. Describe the present methods of handling through freight.
9. Upon what basis does a railroad company pay for the use of cars belonging to another company?
10. Describe the work of the car record office.
11. How do American railroad companies settle their accounts with one another? What system is employed by British railroads?
12. Private cars and car lines: origin, development, and present services.
13. What have been the chief objections to private car lines?
14. Why is it necessary for railroads to charge demurrage?
15. Describe the operation of a clearing house for banks.
16. What would be the advantages of a railroad clearing house?

XII

THE PASSENGER SERVICE

1. Statistics of passenger traffic for year ————:
    a. Number of passengers carried ——.
    b. Passenger miles ——.
    c. Receipts per passenger per mile ——.
    d. Passenger revenue per train mile ——.
    e. Freight revenue per train mile ——.
    f. Average length of passenger journey ——.
    g. Average number of passengers per train ——.
2. What are the leading differences between the passenger and freight services?
3. How do American railways compare with European railways as to frequency of travel?
4. How are the passenger services classified in England and Germany? To what extent are the various classes used?
5. Classification in the United States: Pullman service, first-class, and irregular services, such as the excursion, immigrant, colonist and second-class services.
6. Describe the railway immigrant service.

7. What are the relations between the Pullman Company and the railroads?
8. Why do most railroads rent instead of own their sleeping and parlor cars?
9. What are the leading types of passenger tickets?
10. Outline the method of handling baggage in the United States.
11. How is baggage handled in England and continental Europe?
12. What are the chief methods of developing the passenger business?
13. What advantage has the electric over the steam railway?
14. Describe some recent additions to the conveniences of American passenger service with which you are familiar.
15. What is the volume of the passenger traffic of some of the leading railroads of the United States?

XIII

THE EXPRESS SERVICE OF THE RAILROADS

1. What traffic is shipped by express?
2. General relation of express and freight traffic.
3. History of express business.
4. History of the American Railway Express Company.
5. Classification of express traffic.
6. Express rates.
7. Business organization of the express company.
8. Express shipping papers.
9. Volume of express traffic.
10. Contractual relations between the American Railway Express Company and the railroads.
11. Government regulation of express companies.
12. Compare the express service with the parcel post service.
13. Should the railroads develop their fast freight services and collect and distribute parcels at city terminals?

XIV

THE MAIL SERVICE OF THE RAILROADS

1. How is mail matter classified in the United States?
2. What are "star routes," mail messenger routes?

3. Mail routes in the United States in ———:

	Number	*Mileage*
a. Railroad	——	——
b. Steamboat	——	——
c. Star	——	——

4. Describe the parcel post rate system.
5. Describe the introduction and present use of "railway post-office cars."
6. What is the "fast mail service"?
7. Which class of mail contributes the greatest part of the total weight of mail carried? Which class yields the most revenue?
8. What are the mail services performed by the railroads and required by the Post Office Department?
9. How are the railroads paid for their mail services?
10. How is the rate of pay determined?
11. Reductions in mail pay in 1906 and 1907. Increase for parcel post service in 1913.
12. Postal revenues and expenditures for the year ———:
    a. Receipts, $———.
    b. Expenditures, $———.
13. Total railway mail pay for the year ———, $———.
14. How has the rate of increase in railway mail pay compared with the rate of increase of other post office expenses?
15. What have been the chief causes of postal deficits?
16. Is the present system of railway mail pay an equitable one?
17. Give a summary of the controversy over railway mail pay.

XV

THE ORGANIZATION OF THE SERVICE

1. The railroad company's corporate and its special transportation organization.
2. The duties and place in the company's organization of:
    a. The secretary's department.
    b. The legal department.
    c. The financial department.
    d. The accounting department.
    e. The operating department.

1. Maintenance of way.
2. Machinery.
3. Transportation.

f. The traffic department.
Freight—through, local.
Passenger.

g. Purchasing, real estate, insurance and relief departments.

3. General organization of the Illinois Central Railroad.
4. General organization of the Pennsylvania Railroad.
5. Divisional and departmental types of organization of the operating department.
6. The organization of a division.
7. Describe the organization of a railroad with which you are familiar.
8. Name the presidents of some of the leading American railroads.

XVI

THE ACCOUNTS AND STATISTICS OF THE RAILROAD SERVICE

1. Outline the organization of the accounting department of a railroad.
2. From what sources are the accounts regarding traffic, receipts, and expenditures compiled?
3. From what sources are those of train, car and locomotive performance obtained?
4. Outline the contents of a railroad report.
5. Advantages of uniform accounting.
6. What are the leading functions of the comptroller?
7. What are the leading functions of the auditor of merchandise traffic and the auditor of coal traffic?
8. What are the leading functions of the auditor of passenger traffic?
9. What are the leading functions of the auditor of disbursements?
10. What are the leading functions of the auditor of miscellaneous receipts?
11. What are the leading sources of railroad statistics?

12. What are the leading omissions of desirable data in the present statistical publications concerning commerce and transportation?
13. Secure a railroad report of recent date and tabulate the most important items of information which it contains.

XVII

INTERRAILWAY RELATIONS—RAILROAD COMPETITION AND AGREEMENTS TO MAINTAIN RATES

1. The public nature of the railroad business.
2. Railroad coöperation is necessary, and competition is unavoidable.
3. The growth in the length of the railway systems from 1850 to 1890.
4. Railroad consolidation and confederation after 1890.
5. Character of through passenger and freight service in 1850.
6. The establishment of express companies, fast freight lines, Pullman services and private car lines to provide better through traffic services.
7. Railroad competition in the fifties, in 1869, and 1874.
8. The differential rates to the north Atlantic ports.
9. Early railroad competition in the middle West and South.
10. The nature and economic cause of railroad competition. Necessity for regulating or limiting it.
11. The agreements railroad companies may make to restrain competition.
12. Early rate agreements of the trunk lines.
13. The Saratoga Conference of 1874, and its results.
14. Why rate agreements, without pooling, were a failure.

XVIII

INTERRAILWAY RELATIONS (*Continued*)—POOLS AND TRAFFIC ASSOCIATIONS

1. Define railway pools.
2. Explain how the pooling of freight and the pooling of earnings are arranged.

3. Does competition continue when rival railroads pool their competitive traffic or earnings therefrom?
4. What is the distinction between a railroad traffic association and a pool?
5. The Chicago-Omaha pool of 1870.
6. The Southern Railway and Steamship Association, its origin, territory occupied, plan or organization, its operation in practice, its disruption.
7. The anthracite coal pool, 1872, and thereafter.
8. The live stock and oil "eveners," 1875-1879.
9. The formation of the Trunk Line and Central Traffic Associations in 1877. Territory occupied by each. The westbound trunk line pool.
10. The Joint Executive Committee of the Trunk Line and Central Traffic Associations. The three tasks it existed to accomplish.
11. What was the adjustment of the "seaboard differentials" in 1879? What has been the subsequent history of these rates?
12. What were the effects of railway pooling from 1870 to 1887?
13. The legal status of pooling before 1887. The provisions of section five of the Interstate Commerce Act of 1887.
14. The effects of the prohibition of pooling upon the organization and development of traffic associations from 1887 to 1897.
15. What have been the arguments for and against legalizing pooling?

XIX

INTERRAILWAY RELATIONS (*Concluded*)—THE PRESENT SITUATION

1. History of the Joint Traffic Association. The two grounds on which it was held to be illegal.
2. Decision of the U. S. Supreme Court in the Trans-Missouri Freight Association case.
3. Legal status of rate agreements before and after this decision. Effect of decision upon the traffic association.
4. Necessity for concerted action among carriers making competitive rates.
5. Existing railway traffic associations. The four classes. Name and give the territory of the leading associations of the first class.

6. The organization of the Central Freight Association.
7. Informal rate agreements.
8. Reasons accounting for the rapid consolidation of railroads after 1898.
9. Four methods by which consolidation is brought about.
10. The meaning of "community of interest." How may it be established?
11. The legislation of pooling in 1920.
12. The present attitude of the law toward railroad consolidation.

XX

MONOPOLY AND COMPETITION IN THE RAILROAD SERVICE

1. What is meant by monopoly?
2. Is the railroad business a complete monopoly?
3. What are the monopolistic features of the railroad business?
4. What are the two forms of railroad coöperation? What is the attitude of the law toward each?
5. What are the competitive features of the railroad business?
6. Industrial and commercial competition and rate making.
7. Water competition and rate making.
8. Interrailway competition and rate making.
9. Fixing rates at "what the traffic will bear."
10. Influence of competitive and monopolistic factors on passenger fares.
11. Social considerations in rate making.
12. Is a railroad company ever justified in charging more for a short than for a long haul over the same line and in the same direction, the shorter distance being included within the longer? Reasons.
13. What has been the influence of the competition of electric railway lines on the rates and fares of steam railroads?

XXI

THEORY OF RATES AND FARES

1. Cost of service as a factor in rate making:
    a. General application.
    b. Application to particular commodities.

c. Show that it receives practical consideration.
d. Can you give an instance in which a railroad would be justified in charging more for a particular service than for a similar service which it costs more to perform?

2. Value of service as a factor in rate making; meaning of the term; its influence in rate making; criticism.
3. Value of commodity as a factor in rate making. Its use in practice.
4. Capitalization as a factor in rate making.
5. Government regulation as a factor in rate making.
6. The general rate policy of American railroads.
7. The passenger fare policy of American railroads.
8. Influence of theoretical considerations in the making of passenger fares.
9. What is meant by the socialization of rates and fares?
10. Why is the study of theories of rates and fares of importance?
11. Can you cite instances where theories have been given consideration in practice?

XXII

RATE MAKING IN PRACTICE

1. The machinery of freight rate making:
   a. Who makes freight rates?
   b. Higher supervisory officials.
   c. Sources of information of rate making officials.
   d. Freight traffic associations.
2. Classification the first step in rate making.
3. What forces govern the decisions of a traffic official in fixing rates?
4. Why does rate making in the United States present difficult problems?
5. The eastern trunk line rate system.
6. Rates in the Southern territory.
7. Rates in the West and Southwest.
8. Transcontinental rates.
9. Import and export rates.
10. The machinery of fare making:
    a. Who makes fares?

b. Higher supervisory officials.
c. Sources of information.
d. Passenger traffic associations.

11. How does the problem of fixing passenger fares differ from that of making freight rates?
12. How have the rate policies of railroads in the United States differed from the policies of the railroads in continental Europe?
13. Have social considerations affected in any way the charges on American railroads?

XXIII

THE RAILROADS AND THE STATE. REGULATION IN THE UNITED KINGDOM AND GERMANY

1. The twofold relation of the state to the railroads.
2. Why is some form of government control of railroads necessary?
3. What four forms may the relation of the state to the railroads take in the matter of regulation and control?
4. How may the absence of government aid to railroads in the United Kingdom be explained?
5. What forms of railway consolidation have been employed in Great Britain?
6. What has been the general attitude of the British Government toward railroad consolidation?
7. What has been the attitude of the British Government toward agreements entered into by the railroads for the purpose of controlling competition?
8. What has been the general plan of rate regulation followed by the British Government?
9. Maximum tolls fixed by charters.
10. Legislation before 1854.
11. The Act of 1854 and its results.
12. The Act of 1873 and its results.
13. The Report of the Select Committee of 1881-1882.
14. The Cheap Trains Act of 1883.
15. The Railway and Canal Traffic Act of 1888:
    a. Organization of the Commission.
    b. Powers of Commission.

c. General provisions of the law.
d. The "conciliation clause."
e. Provisions for readjustment of rates.

16. The maximum rate laws of 1891-1892.
17. The Railway and Canal Traffic Act of 1894.
18. The law of 1913.
19. British railways during the World War.
20. The Ministry of Transport Act of 1919.
21. Probable nature of the future British railway policy.
22. The reasons for government aid to early railroads in Germany.
23. Influences which brought about the nationalization of railroads in Prussia.
24. What was the railway policy most favored by Bismarck? Why was it not carried out?
25. What powers with respect to the German railways were possessed by the Imperial Government?
26. Organization and management of Prussian railways:
    a. Department of Public Works.
    b. 21 operating Directories.
27. Rate making on Prussian railroads. The system of advisory councils.
28. Other German railway associations.
29. Financial results of state management in Prussia.
30. Results with respect to facilities, services and rates.
31. German railways during the World War.
32. The present German railway policy.
33. What accounts for the variations in the railway policies of different nations?
34. Why is public ownership displacing private control of railroads?

XXIV

PUBLIC AID TO RAILROAD CONSTRUCTION IN THE UNITED STATES

1. State Aid to Railroads

1. Origin of the policy; influence of the distribution of the Federal surplus in 1837; the early aid consisted of State purchases of stocks and bonds.
2. Amount of aid given by the nineteen States that gave assistance.
3. Small results accomplished; reasons why the States failed.

2. National Aid

4. Federal surveys; policy regarding tariff on railroad iron; free rights of way.
5. Land grants and land-grant policy, 1850-1862.
6. Form of grant—the Illinois Central grant of 1850.
7. Land grants and land-grant policy, 1862-1871.
8. The land grants to aid the Union-Central Pacific line.
9. The Crédit Mobilier scandal, and the opposition to land grants after 1872.
10. The forfeiture act of 1890.
11. The Federal loans to the Union-Central Pacific companies, and the final repayment of the debts by the companies.
12. Purpose and results of the Federal land grants to the railroads.

3. Local Aid

13. Amount of county and city bonds issued to aid railroads.
14. Methods employed by the railroads in securing the aid of local governments.
15. Individual aid—methods by which investors were made to lose their investments.
16. Influence which government aid and methods of railway promotion had upon public sentiment for government regulation.
17. Has the public been adequately recompensed for the aid given to railroads?
18. Was the land-grant policy of the Federal Government a wise policy?

XXV

REGULATION OF RAILROADS BY THE AMERICAN STATE GOVERNMENTS—THE STATE COMMISSIONS

1. Constitutional limitations of the State's power to regulate railways.
2. Legislative as contrasted with judicial functions in regulation.
3. Early regulation: *Laissez faire* (1840-1870).
    a. State aid.
    b. Charter regulation.
    c. Early rate laws.
    d. Early commissions.
4. Granger legislation (1870-1880).

5. Importance of Supreme Court decisions in granger cases.
6. Gradual development of State regulation (1880-1902).
7. Great increase in State regulation (1903 to the present).
8. Types of State commissions:
    a. Mandatory railroad commissions.
    b. Public utilities or public service commissions.
    c. Corporation commissions.
9. Various degrees of rate making power:
    a. Advisory power.
    b. Revisory power upon complaint.
    c. Revisory power upon initiative.
    d. Power to make schedule of rates.
10. Powers and organization of the Public Utilities Commission of Illinois.
11. Powers and organization of the Public Service Commission of Pennsylvania.
12. Powers and organization of the Public Service Commissions of New York.
13. Powers and organization of the State Corporation Commission of New Mexico.
14. Tendencies in commission legislation.
15. State regulation by statute:
    a. Maximum rate laws.
    b. Anti-rebating and discrimination laws.
    c. Laws requiring notice of rate changes.
    d. Laws requiring that rates be published.
    e. Passenger fare laws.
    f. Mileage book laws.
    g. Antiscalping laws.
    h. Antipass laws.
    i. Antitrust laws.
    j. Car service laws.
    k. Laws as to stations and terminals.
    l. Train service laws.
    m. Regulation of live stock traffic.
    n. Laws regulating private railway sidings.
    o. Jim Crow laws.
    p. Public safety statutes.
    q. Train crew statutes.
16. Criticisms of State regulation.
17. The conflict of State and Federal authority.

18. The Transportation Act of 1920 and the problem of State regulation.

XXVI

RAILROAD REGULATION BY THE FEDERAL GOVERNMENT—THE ACT OF 1887

1. The agitation for Federal regulation of railroads (1872-1887):
   a. The demand for cheaper rail rates in the early seventies.
   b. Influence of the granger legislation of the States.
   c. The Windom Committee and its report in 1874.
   d. The McCreary bill of 1874.
   e. The Reagan bill of 1878.
   f. The Cullom Committee and its report, 1886.
   g. Decision of the U. S. Supreme Court in *Wabash* v. *Illinois* in 1886.
   h. Enactment of the Interstate Commerce law in 1887.
2. The operation of the Act of 1887:
   a. Orders of Commission not binding.
   b. Admission of new evidence by courts.
   c. The lack of power of the Commission to compel witnesses to testify, 1890-1896.
   d. The Commission did not possess the power to fix maximum rates.
   e. The Commission could not effectually prevent personal discrimination.
   f. The interpretation of the long and short haul clause.
   g. Discriminations in import rates.
3. The beneficial results of the law.
4. Five needed changes in the law, 1900.

XXVII

FEDERAL LEGISLATION FROM 1903 TO 1914

1. The Elkins Act of 1903:
   a. Corporations as well as agents liable.
   b. Receiver of rebate guilty as well as giver.
   c. Only published rates legal.

d. Penalty of fine for departure from published rates. Penalty of imprisonment restored in 1906.
e. Federal courts authorized to order the observance of published rates.

2. Expediting Act, 1903.
3. Hepburn amendment to Interstate Commerce Act, 1906. Leading changes in law:
   a. Law made applicable to other transportation agencies.
   b. Rates not to be changed except on 30 days' notice.
   c. Free transportation regulated.
   d. Interstate Commerce Commission enlarged.
   e. Commission given rate making power.
   f. Orders of Commission made binding unless set aside by courts.
   g. Commission authorized to prescribe system of uniform accounting.
4. Judicial review of the Commission's orders.
5. The Mann-Elkins Act of 1910:
   a. Commission given power to suspend proposed changes in rates.
   b. Long and short haul clause made effective.
   c. The Commerce Court.
   d. Minor features of law.
6. Amendments to Interstate Commerce Act in 1912 and 1913.
7. Other Federal legislation for railway regulation:
   a. Sherman Antitrust Act of 1890.
   b. Clayton Antitrust Act of 1914.
   c. Safety appliance laws.
   d. Erdman Act of 1898; amended by Newlands Act of 1913.
8. Criticisms of the system of regulation in effect in 1914.

XXVIII

NEW RAILROAD PROBLEMS: GOVERNMENT OPERATION

1. Financial condition of railroads, 1910-1917.
2. The Five Per Cent Case of 1913.
3. The Adamson Act.
4. Operating problems during the early years of the European War.

5. The Council of National Defense.
6. The Railroads' War Board.
7. The Advanced Rate Case of 1917.
8. Special Report of the Interstate Commerce Commission, December 1. 1917.
9. The railroads taken over by the Government.
10. Organization of the U. S. Railroad Administration.
11. The Federal Control Act.
12. Operating results during Federal control.
13. Financial results of Federal control.
14. The need of a new railroad policy.

XXIX

THE TRANSPORTATION ACT OF 1920

1. The "plans" for railroad regulation.
2. The attitude of Congress and the public toward government ownership.
3. The railroad problem in Congress.
4. The Transportation Act passed.
5. Financial provisions of the Transportation Act.
6. Labor provisions of the Transportation Act.
7. Amendments to the Interstate Commerce Act.
    a. The rule of rate making.
    b. The commission authorized to name minimum rates.
    c. Federal control of railway capitalization.
    d. Federal control of intrastate rates.
    e. Legalization of pooling.
    f. Modification of the "long and short haul" clause.
    g. Control of car service and terminals by the commission.
    h. Plan for railway consolidation.
8. The resumption of private operation.
9. The advance of wages and rates.
10. The business depression and its effect on the railroads.
11. Work of the Railroad Labor Board.
12. The financial condition of the railroads.
13. The main provisions of the Interstate Commerce Act as amended to date:
    a. Act applies to railroads, pipe line companies, telegraph,

telephone and cable companies, express companies and sleeping car companies, and to interstate and foreign traffic not carried entirely by water.

b. Charges must be reasonable, absolutely and relatively, as between persons, places and commodities. Passes prohibited with certain exceptions.

c. Carrier must not be both producer and carrier of commodities, except timber and manufactured products thereof.

d. Carriers must construct switch connections where reasonably practicable.

e. Carrier must not charge more for a short haul than for a long haul over the same line in the same direction, the shorter distance being included within the larger, unless permitted to do so by the Interstate Commerce Commission.

f. Pools may be established and maintained with the consent and under the supervision of the Interstate Commerce Commission.

g. Railroads not to own competing water carriers.

h. Schedules of rates and fares must be published and filed with the Interstate Commerce Commission. Published rates to be strictly observed.

i. Carrier must furnish written statement of rate upon application.

j. Carriage of freight must be treated as continuous unless stoppage is in good faith.

k. Persons claiming to be damaged by carriers subject to Act may bring suit for recovery either before the Interstate Commerce Commission or in a Federal Court.

l. Penalties for violation of the Act—fines and imprisonment.

m. Interstate Commerce Commission created. Eleven members, term of office seven years, salary $12,000.

n. General powers and duties of the Interstate Commerce Commission:

1. To execute and enforce provisions of Act.
2. To make investigations either upon complaint or upon its own initiative.
3. To correct rates found to be unreasonable.

4. To suspend proposed rates and pass upon their reasonableness.
5. To initiate rates and keep the general level of rates such as will enable the carriers to earn a fair return upon the value of their property devoted to transportation.
6. To revise freight classifications, to establish through water routes and joint rates.
7. To modify state rates which cause discriminations against interstate commerce.
8. To control car service.
9. To require a carrier to permit the use of its terminals by another carrier.
10. To issue appropriate orders and award damages. Its orders binding unless set aside by Federal courts.
11. To make a valuation of railroads.
12. To control railroad capitalization.
13. To prepare a plan for the consolidation of the railroads into a limited number of competitive systems.
14. To permit consolidations which are in harmony with its plan.
15. To prescribe and enforce a uniform system of accounts.
16. To require annual and special reports.
17. To enforce safety appliance laws.
18. To compel railroads to establish connection with ocean lines.

XXX

THE COURTS AND RAILROAD REGULATION

1. The courts determine the meaning and scope of laws. Illustration afforded by the Supreme Court's application of the Antitrust law to railroads.
2. Consequences resulting from leaving to the courts the enforcement of the orders of the Interstate Commerce Commission under the Act of 1887.
3. The scope of the equity jurisdiction of the courts in passing upon railroad rates.

4. Extension of "court review" of rates fixed by State laws:
   a. Position taken by the Supreme Court in the Granger decisions in 1877. *Munn* v. *Illinois.*
   b. In the Mississippi Rate cases in 1885. "This power to regulate is not a power to destroy."
   c. In the Minnesota Railroad and Warehouse case, 1890.
   d. In the Nebraska Maximum Rate case, 1898. *Smyth* v. *Ames.*
   e. In *Ex Parte Young,* 1908.
5. What is the present doctrine of "court review"?
6. The power of the courts to enjoin a proposed increase in rates.
7. The power of the Interstate Commerce Commission to suspend and prevent proposed rate advances.
8. Power of the courts to enjoin the railways from charging unjustly low rates. The history of the rate war between the Seaboard Air Line and the Southern Railway Company.
9. Court injunctions to compel railways to charge their published rates. Elkins Act of 1903.
10. The general law of strikes.
11. The exceptions to this general law of strikes in the case of railroad employees.
12. What is a "blanket injunction"?
13. The injunction in the Ann Arbor strike, 1893.
14. Judge Jenkins' order in the Northern Pacific and Union Pacific strikes, 1894.
15. The history of the Debs strike, 1894.
16. Federal regulation of the use of the injunction in labor troubles.
17. What is the purpose of a railway receivership?
18. Periods of railroad insolvency, 1873, 1885, 1893, 1915.
19. Causes of railroad insolvency in the United States.
20. "The bane of friendly receiverships."
21. What changes in the present law and practices of railroad receiverships have been advocated?

XXXI

THE PROBLEM OF GOVERNMENT REGULATION AND GOVERNMENT OWNERSHIP IN THE UNITED STATES

1. The twofold nature of the problem of government regulation.
2. Why has the problem arisen?

3. How may the problem be dealt with?
4. Government ownership a question of expediency, not of principle.
5. Why is the railway experience of one country not a safe guide of action in another country?
6. The probable effect of government ownership on railroad service in the United States.
7. The probable effect on rates.
8. Effect upon politics and government.
9. The results of regulation in the United States.
10. What are the chief features of the present problem of government regulation in the United States?
11. What course should be adopted in attempting to solve this problem?
12. What are the main arguments in favor of government ownership of railroads; the main arguments against government ownership of railroads?

INDEX

Accounting, government regulation of, 259.
Accounting department, organization of, 250-51.
Accounts, need for accuracy and uniformity in, 258; of the railroad service, 250-262; usefulness of, 250.
Adams, Alvin, organizes the express company, 203.
Adams Express Company, 203-204.
Adamson Act, 494.
Advisory Commission appointed, 497.
Air brake, 64.
Air mail service, 224.
Alaskan railroad, 407.
American railroad, first for general public use, 22; origin of, 13-23.
American railroad net, growth of, 25-37.
American Railway Association, 318; National Industrial Traffic League and, coöperation of, 319.
American Railway Express Company, 206; internal organization of, 205.
Ann Arbor strike, 549.
Antitrust law, application of, to railroads, 483; traffic associations, a violation of, 305.
Army Appropriation Act, 496.
Association of American Railroad Accounting Officers, influence of, 260.
Atlantic ports (north), rivalry of, 279.
Automatic stops, 78.

Baggage service in European countries, 196; in the United States, 195.
Baldwin Locomotive Works, founding of, 47.
Ballast, 45.
Ballin, Albert, 394.
Baltimore & Ohio Railroad, beginning of, 22; reaches the Ohio River, 29.
Basing point system of rates, 357.
Bills of lading, 160.
Bismarck, influence of, regarding the railway policy of Germany, 393.
Block signals, three kinds of, 77.
Board of Mediation and Conciliation, 485.
Board of Railway Wages and Working Conditions, 508.
Board of Trade, British, powers of regarding railways, 377.
Bonds, classes of railway, 109; precedence of the holder of, over stockholder, 110.
British Railway Clearing House, functions of, 176.
British Railways Act of 1921, 389.
Buffalo, connection with, by railroad, 22, 28.

Camden and Amboy Railroad, chartered, 23.
Canal building, decline of, after 1840, 19.
Canal routes, early survey for, 15.
Canals, early, 17. *See also* canals by name.
Capital, railroad, 108-130.
Capitalization, bases for, 121; chart of, 1890-1918, 115; comparison of, with other industries, 35-37; per mile of line in 1918, 111; proposed Federal regulation of, 128; public regulation of, 124; state laws regarding, 125; total, 33, 110.
Car interchange, 174.
Car Service Commission, 496.
Carmack Amendment, 471.
Cars, postoffice, 231; records of moving, 176; sleeping, 63; vestibule of, 63.
Central Freight Association, purposes of, 316, 317.
Central Pacific Railroad, 30.
Charleston and Hamburg Railroad, 22.
Charters, British railroad, 371, 375; foreign, 104, 403; in France, 403; inadequate protection to public, in, 103; limitations of rates and profits in, 424.
Chesapeake and Delaware Canal, 19.
Chesapeake and Ohio Canal, 19.
Chicago-Atlantic traffic, struggle for, 279-282.
Chicago, first rail connection with, 28.
Chicago Omaha pool, 291.
Class tariffs, 158.
Classification, committees, work of, 151, 157; express, 209, 210; freight, how determined, 153; mail matter, 219; passenger, 187; uniform, 156.
Clayton Antitrust Act, regulation of use of injunctions in, 483.
Commerce, defined, 4.
Commissions, state, types of, 435.

Commodities clause, of Interstate Commerce Act, 451.
Commodity tariffs, 158.
Community of interest, 309, 310.
Competition, railway, and agreements to maintain rates, 282; and monopoly in the railway service, 321-333; early in Great Britain, 372; in the West and South, 280, 281; influence of, upon local rates, 330; nature of, 274; not confined to junction points, 328; of two kinds, 327; restraint of, a necessity, 284; the Troy Case of 1897, 462.
Competition of markets, 329.
Comptroller, duties of, 251.
Consolidated Classification, 152; Committee, work of, 151.
Consolidation, accompanied by an increase in capitalization, 119; beginning of, 28; effect of, 332; in Great Britain, 372; methods of, 308; under the Transportation Act, 93.
Construction, railroad, in the United States, 1850-60, 26; 1860-70, 30; 1870-90, 31; after 1890, 32; since 1912, 33; public aid to, 407-421.
Coöperation, attitude of law towards, 315; in rate making, 354; of two kinds, 326.
Coöperative freight lines, 173.
Corporation, defined, 97; special characteristics of railroad, 99.
Corporation Commissions, 435.
Corporations, insolvent, 106; mileage of railroads owned by, in 1916, 557; of two general kinds, 99; size of railroad, 104.
Cost, meanings of the term, 336.
County aid to railroad building, 418.
Courts, action of regarding orders of Interstate Commerce Commission, 476; attitude of, toward rate regulation, 537, 543; early rulings of, regarding Interstate Commerce Act, 456; no authority to make rates, 536; powers of, to review railroad legislation, 102; the, and railroad regulation, 534-561.
Crédit Mobilier, financial methods of, 118.
Crossties, timber used for, 44.
Cullom report, 450.
Cumberland Road, construction of, 15.
Cummins, Amendment to the Interstate Commerce Act, 164; Bill, 514.

Dartmouth College case, 432.
Debs strike, 551.
Delaware and Hudson Canal, 17.
Delaware and Raritan Canal, 18.
Demurrage, 170.
Departmental type of organization, 240.
Differential rates to North Atlantic ports, 280.
Director General of Railroads, Wm. G. McAdoo, 504.
Discriminations, abuses of local in 1887, 460; demand for abolition of unreasonable, 449; Hepburn amendment strengthens law against, 477; in import rates, 463; law of 1910 regarding, 478; may be just or unjust, 346; prohibited in the Interstate Commerce Act, 451, 452, 458, 460; provisions of Elkins Act regarding, 467, 468.
Dismal Swamp Canal, 16.
Dividends, 113, 115; payments for in 1918, 138.
Divisional type of organization, 240.

Earnings of American railroads, 1899-1918, 140; expenses and dividends, 131-143; relation of, to business conditions, 141.
Electric locomotive, advantages of, 79.
Electrification of steam railroads, 79.
Elkins Act, main provisions of, 467, 471.
Empire Transportation Co., functions of, 172.
England, fares in, 388; first railroad in, 22.
Erdman Act, of 1898, 485.
Erie Canal, construction of, 18.
Esch bill, 496, 514.
European, and American railroad mileage, comparison of, 33; countries, fares in, 388, 400; freight rates in, 388, 400.
Eveners, 295.
Ex parte Young case, 540.
Expediting Act, 468, 474.
Express, classification, 210; companies, contractual relation of, with railroads, 208; how an agent obtains rate, 212; internal organizations, 205; leading company, 206; organization of American Railway Express Co., 206; rates, the system of, and classification, 211, 212; shipping papers, 207; statistics of, 213.
Express service of the railroads, 201-216; advantages of, 214; general character of, 201; origin of, 203; parcel post, and the, 213.

Fares, passenger, comparison of with freight rates, 182; need of a theoretical basis for, 334; problem of fixing, compared with freight rate problem, 361.
Fares and rates, theory of, 334, 348.
Fast freight lines, decline of, 174; formation of, 171.
Fast mail trains, 225.
Federal Commission of Mediation and Conciliation, 485.
Federal employers' liability law, 485.

Federal Government, railroad regulation by the, 448-466.
Federal regulation, present system of, 486; the greatest obstacle to adequate, 486. *See also* Regulation and Government regulation.
Federal managers appointed, 505.
Fink, Albert, 296.
Fixed charges, 135.
France, railroads of, 402-403.
Franchises, 8.
Freight, classification of, 149; how an agent ascertains rates on, 158; through and local, 159.
Freight car, capacity of, 67; many designs of, 66; steel, 68.
Freight service, business organization of, 160-180; classification of freight, 147-159.
Freight shipping papers, 160.
Freight terminals, classification of cars in, 75; requisites for, 72; transfer freight house, 76.
Freight traffic, pool, description of, 288; United States statistics, additional required, 267; volume of in United States, 148.
Full crew laws, 441.

Gallatin, report of, to Congress, 17.
Germany, post war organization, 400; railroad policy of, early, 391; prewar organization of, 396; relation of the railways to the states in, 392; war increases of rates, 400; war organization of, 396.
Gladstone, William E., 377.
Gould railroad interests, 87.
Government aid to railroad construction in the United States, 407-421.
Government control of railways in foreign countries, 402-405.
Government operation, 489-511; Army Appropriation Act, 504; board of railroad wages and working conditions, 508; Council of National Defense, 497; Director General, Wm. G. McAdoo, 510; Federal managers, 505; organization, railroad administration, railroad control act, 506; preference freight, under authority of United States Shipping Board, Navy, Food and Fuel Administration, 508; Railroads' War Board, 498; twenty-five per cent rate increase, 509; Walker D. Hines, 510.
Government ownership, a question of expediency, 565; effect of, upon politics and government, 567; in the United States, an unwise policy, 570; of railroads, mileage of, in 1912, 565; probable effect of, in United States, 568; probable effect of, upon rates, 569-570; should the United States adopt a policy of, 567; socialization of rates and fares, possible under, 571; the question of, 389.
Government ownership and government regulation in United States, the problem of, 563-577.
Government regulation, early causes of demand for, 419; need for constructive policy regarding, 575; success of, in United States, 574; two methods of, 564; twofold problem of, 563; uniformity desired in, 442.
Government regulation and government ownership in United States, the problem of, 563-577.
Government regulation of railroads in the United Kingdom, 367-389.
Granger laws, modificaion of, 433; opposed by the railroads, 432; reasons for, 430; upheld by Supreme Court, 433.
Granger legislation, 537.
Granger lines, 87.
Great Britain, effect of World War upon rates and fares, 387; methods of railroad coöperation in, 372; post war control, Ministry of Transport Act, 1919, 387; Railways Act, 1921, 389; regulation of railway combinations, in, 374; summary of complaint against railways in, 380; war time operation, 385.
Grouping of railroads, by ownership and control, 88; territorially, 85.

Hadley Commission, report by, on railroad securities, 127.
Harnden, William, founder of express service, 203.
Hepburn amendment, main provisions of, 471.
Hepburn Committee, report of, 297.

Illinois, law of, regarding public utilities, regulation, 437.
Illinois Central Railroad, organization of, 242.
Immigrant clearing house, 191.
Immigrant service, 191.
Import and export rates, 360.
Import rate case, 463.
Import rates, decision of Supreme Court regarding, 463.
Income account, 252.
Industrial agents, work of, 331.
Industrial Commission, report of, 261.
Injunctions, against secret rebates, 547; compelling railroad employees to work, 550, in labor disputes, 549; regulation of use of, in Clayton Antitrust Act, 554; to prevent rate wars, 545; to protect property and personal rights, 546.
Insolvency, causes of, 106, 558; increase of, beginning in 1912, 559. *See also* Railway receivership.

Insurance department, 247.
Interrailway relations, 273-319; present and prospective, 310; present situation, 304-319.
Interrailway rivalry, its beginnings, 278.
Interstate commerce, regulation of, vested in Congress, 100.
Interstate Commerce Act, amendments to, since 1910, 480, 512; chief provisions of, 451; defects of, 455-456; enacted, 451; needed changes in, 464; operation of the, 455; results accomplished by, 464.
Interstate Commerce Commission, powers and duties of, 454; powers of, granted by the Mann-Elkins Act, 471, 477; powers of, granted by the Transportation Act of 1920, 512-533; powers of, to regulate rates, 459.

Joint Executive Committee, work of, 296.
Joint Traffic Association, 305.
Judicial review, development of, 536; the question of, 474.

Labor disputes, injunction in, 548.
Labor, railway, 568.
Lancaster turnpike, 14.
Land grants, first, 27, 411; in aid of railroads, amount of, 414; purposes of government in making, 417; repeal of the, 415; terms of the, 412.
Legal department, 236.
Locomotive, classification of, 57; early, 46; electric, advantages of, 79; first construction of in the United States, 23, 46; first run on an American road, 46; largest ever constructed, 56; later types of, 51; recent improvements in, 58; tractive power of, 59; terminal, 76.
Long and short haul clause of Interstate Commerce Act, 451; revision of, 478.

Mail, classification of, 219; government regulations for transporting, 227; service of the railroads, 218-234; services performed by railroads in transporting, 226; statistics of, 223.
Mann-Elkins Act, chief features of, 477.
Massachusetts, chartering of railroads in, 23; Commission of, 1869, powers of, 427.
Maximum rate case, 460.
Middlesex Canal, 16.
Mileage, growth in by decades, 26; in the United States in 1918, 84; ratio of to population, 95.
Minnesota Railroad and Warehouse Commission case, 539.
Minnesota Rate case, 101.
Mississippi Railroad Commission cases, 538.
Money pool, description of, 288.
Monopoly, competition and, in the railroad service, 321-333; illustration of a, 324; what is meant by, 323.
Morris Canal, 18.
Municipal aid to railroad building, 418.
Munn v. Illinois, 537.

National aid to railroad construction, 411; policy of the government regarding, 417.
National express company, 204.
Nebraska rate case, 539-540.
Net income, 135.
New England railroad group, 86, 90.
New York, passenger terminals at, 72.
New York Central system, early consolidations of, to form the, 29; parent company of, 22.
Newlands Act, 485.
Non-operating income, 135.
Northern Securities Company, organized, 119.

Official Classification, territory covered by, 150.
Ohio canals, 19.
Operating, department, organization of, 243; expenses, 134; ratio, 138; revenue, sources of, 133.
Operation, federal regulation of, 484; governmental, war time, 489-511.
Organization, departmental type, 240; divisional type, 240; Illinois Central Railroad, 242; of railroad service, 235-249; Pennsylvania Railroad, 244.

Pacific Coast, early railroad to, 30.
Pacific Express Company, 204.
Pacific railroads, land grants to, 415.
Panama Canal Act, 481.
Panama railroad, 407.
Panic of 1857, and 1873, effect of, on railroads, 28, 30, 278, 433.
Parcel Post, express service, and the, 215; insurance for packages by, 223; rate system for, 220.
Partnership, defined, 98.
Passenger business, percentage of, 147.
Passenger cars, early, 61; steel, 63.
Passenger fares. *See Fares.*
Passenger revenues in the United States, 183-185.
Passenger service, 181-200; general characteristics of, 181; use of electricity for motive power, 199; varieties of, in United States, 188, 190.

Passenger terminal, essential parts of, 69.
Passenger traffic, comparison of with foreign countries, 186; development of, 196; volume of, in United States, 185.
Peik v. Chicago and Northwestern, 433.
Pennsylvania, begins system of public works, 18; early construction of roads by, 14; railroad building in 1830-35, 23.
Pennsylvania Railroad, beginning of, 23; chartered, 29; organization of, 244-247.
Per diem, 175.
Percentage rate system, 357.
Philadelphia, Wilmington and Baltimore chartered, 23.
Pittsburgh, first through route to, 18, 28.
Pooling, beginning of, 290; contracts illegal at common law, 300; in 1887, 296; present phase of, under the Transportation Act of 1920, 521; prohibited by the Interstate Commerce Act, 299.
Pools, railway, and traffic associations, 288-303.
Postal cars, equipment of, 226; rate of pay for, 231.
Postal deficit, cause of, 232.
President, annual report of, 252.
Private cars, classes of, 178; number of in use, 179; objections to, 178-179.
Production, defined, 3.
Profit and loss account, 256.
Promoter, the, 502.
Prussia, early railroad policy of, 391; fares, war time increases, 400; nationalization of railroads in, results of, 398; nationalization of railroads in, 394; railroad management in, 395; rate making in, 396. *See also* Germany.
Public aid to railroad construction in United States, 407-421.
Public Service Commissions of the States, 435.
Pullman, George M., designer of sleeping car, 63.
Pullman Company, (Debs) strike of 1894, 551.
Pullman service, business arrangements, with the railroad company for, 193.
Purchasing department, 247.

Quincy tramway, 20.

Rail, development of, 39; first American, 40; present weight of, 43; substitution of iron for wooden, 42.
Railroad, antecedents of, 14; government's relation to, twofold, 367; mechanism of, 38-82.
Railroad business, not a complete monopoly, 332; public nature of, upheld by Supreme Court, 432.
Railroad Commissions, first and their functions, 426; powers of, 436; two types of, 427.
Railroad company, corporate organization, 240.
Railroad corporation and its charter, 97-107.
Railroad facilities, supply of in United States and foreign countries, 94, 95.
Railroad policy of the state, conditions which determine, 405.
Railroad problem, what constitutes the, 104, 369, 427, 434, 430.
Railroad receiverships, friendly, 560; objections to present system of, 559; purpose of, 555; suggested changes in, 560, 562; statistics, 556.
Railroad regulation by Federal government, 448-466.
Railroad service, cost of a, particular, 335; organization, of the, 235-249.
Railroad system of the United States, the present, 84-96.
Railroad valuation, rule of rate making, under the Transportation Act of 1920, 525.
Railroads' War Board, 498.
Railway and Canal Commission of England, powers of, 381, 385.
Railway charges, cost, an undesirable and impractical basis of, 337; cost of service theory, 337; Supreme Court upholds state legislation regarding, 432; two cent fare laws, 439; value of commodity theory, 342; value of service theory, 340; what the traffic will bear, 343.
Railway clearing house, 176, 177; British, 176, 373.
Railway mail pay, 231.
Rate, what is a theoretically just, 347.
Rate making, authority granted to the Interstate Commerce Commission, 518, 519, 524.
Rate making, control of Federal courts over, 542; machinery for, 350; problem of, 352; railroad cooperation in, 355.
Rate regulation by the states, 537.
Rate systems in the United States, 356.
Rate war, in 1869, 278; injunctions to prevent, 545.
Rates, freight, Advisory Committee on, 388; differential to North Atlantic ports, 279; express, 209, 210; importance attached to distance in

making, 339; influence of competition upon local, 330; need of a theoretical basis for, 335; parcel post, 219, 220; power to suspend in Mann-Elkins Act, 477; probable effect upon, of government ownership in the United States, 569; railway competition and agreements to maintain, 273-287; the Ministry of Transport and, 388.
Rates and fares, chief aim of traffic official in fixing, 344; socialization of, 347; theory of, 334-348.
Reading Railroad chartered, 23.
Reagan v. Farmers Loan and Trust Co., 539.
Real estate department, 247.
Rebates, injunction to prevent, 547; law preventing, 356.
Reciprocal demurrage, 171.
Regulation, a necessity, 369; by Congress, 100; by the American State Governments, 422-447; by the courts, 102; by state legislatures, 101; causes of, 573; forms of, 370; functions of judiciary in, 536; origin of demand for, 448; power of the government regarding, 100; problem of, in the West, 429; the courts and, 534-560; where first undertaken in the West, 431. *See also* Federal, State, and Government Regulation.
Relief departments, 247.
Rent, defined, 5.
Revenue, sources of, 131.
Right of eminent domain, 367.
Roadbed, early types of, 41.

Saratoga Conference of 1874, 286, 295.
Schuylkill navigation, 17.
Seaboard Air Line, rate controversy of, 1896, 544.
Secretary's department, 236.
Securities, comparison of, values of, 114.
Shipping papers, express, 207; freight, 160.
Shreveport rate case, 101, 443.
Signals, railway, 77. *See also* Block signals.
Sleeping cars, origin of, 63.
Smyth v. Ames, 540.
Social Circle case, 477.
Southern Classification, territory covered by, 150.
Southern Express Company, 204.
Southern Railway and Steamship Association, 292.
Southern railway rate controversy, 544.
Southern rate system, 357.
Southern territory, railroad systems in, 87.
State aid to railroads, amount of, 409; forms of, 409; results of, 410.
State legislatures, powers of, to regulate railroads, 101.
State regulation before 1870, 423; complex problems of, 440; defect in, 265; lack of uniformity in, 442; objections to, 441; preceded that by Federal Government, 423.
State regulation, recent methods of, 434.
Statistics of railroads, 262-268; five leading sources of, 262; publication of, 263-264.
Stephenson, inventor of the locomotive, 21.
Stock, classes of, 110; how affected by speculation, 142-143.
Stockholders, number of, in two representative railroads, 105.
Stock-watering, effect of, 120; evils of, 116-119; methods of, 118; motives of, 113; purpose of, 139.
Strikes, Federal law concerning railroad, 485.

Tariff policy of American and foreign railroads, 363.
Technics of transportation, 2.
Telegraph, service of, to railroading, 77.
Terminals, importance of, 68; use of electric power in, 68.
Tickets, types of, 195.
Toll roads, beginning of, 14.
Track, early construction of, 38.
Track storage charges, 170.
Traffic associations, a violation of the antitrust law of 1890, 306; and pools, 288-303; existing, 315; functions of, 316; four classes of, 315; present status of, 313-314; reorganization of, after 1897, 301.
Traffic department, organization of, 241.
Tramway companies, chartering of, 20.
Trans-Missouri Freight Association, 311, 312, 535.
Transcontinental railroads, Federal aid to, 30; first, 30; land grants to, 411-412.
Transcontinental rate system, 359.
Transcontinental territory, railroad systems in, 88, 91.
Transportation Act of 1920, 512-533; consolidation, provisions as to, 445; consolidation under, 519; Esch car service act amplified under, 521; government guarantee under, 515; limitation of securities issue in consolidation, under, 129; national regulation under, 101; passed, 35; protection against

rate wars, 547; railroad boards of labor adjustment, 516; Railroad Labor Board created, 516; rule of rate making, 35, 517; State control over rates, under, 443.
Transportation, a service of a public nature, 8, 368; and political science, 9; and the production and use of wealth, 4; definition and scope of, 1-9; department, 239; economics of, 3; relation of, to the distribution of wealth, 5; relation of the government to, 7, 9; service, public nature and unity of, 273; technics of, 2.
Treasury department, 237.
Trunk line pool, 296.
Trunk line rate system, 356.
Trunk lines, designation of, 86; efforts of to regulate competition, 304.
Turnpikes, 14.

Uniform accounting, prescribed in Hepburn amendment, 259.
Union line, functions of, 174, 177.
Union-Pacific Southern-Pacific system, 88.
Unit billing, 168.
United States Express Company, 204.
United Kingdom, capitalization per mile of railroads in, 112; freight rates in, 387; railroads of, received no state aid, 371; regulation of railroads in, 367-389.
Utilities commissions, 434-435.

Valuation of non-physical property, 123.
Valuation of railroads, authorized by Congress, 35.

Wabash decision, 433.
Wages, defined, 6.
Washington, D. C., passenger station at, 72.
Washington, President, plans for a national highway, 16.
Waybill, express, 207; freight, 165, 166.
Wells, Fargo & Co., 204.
Western Classification, territory covered by, 150.
Western Express Co., 204.
Western rate system, 358.
Westinghouse, George, inventor of the air brake, 64.
Wilson, President, assumption of the control of the railroads of the United States, proclamation of, 504; proclamation for the relinquishment of the control of the express business, 205.
Windom, report, 449.

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